THE ASTRONOMICAL JOURNAL VOLUME 101, NUMBER 4 APRIL 1991

THE LARGE, BRIGHT QSO SURVEY. III. QSOs IN SIX EQUATORIAL FIELDS[1]

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Received 22 October 1990

ABSTRACT

This is the third paper in a series aimed at selecting ~ 1000 QSOs brighter than $B_J \simeq 18.7$ using machine-scanned direct and objective-prism plates from the UK Schmidt Telescope. The plate material is scanned at the Automated Plate Measuring facility. The candidate list is derived using a number of complementary selection algorithms ranging from "traditional" criteria, such as the presence of strong emission features, to criteria designed to select objects whose objective-prism spectra cannot be classified as normal stars, although they may possess no obvious QSO-like features. Follow-up spectroscopy at the Multiple Mirror Telescope is used to classify each candidate. In this paper we present results from six new UK Schmidt Telescope equatorial fields in which 335 QSOs have been found in a total area of 190 square degrees, equivalent to an effective area of 169 square degrees once allowance for the fraction of unprocessed spectra is made. We also report the detection of a further 29 QSOs in the four fields in Virgo discussed in the first paper of this series. We present coordinates, magnitudes, redshifts, and spectra of moderate resolution and signal-to-noise ratio for all 365 QSOs as well as for nine additional extragalactic objects which fail to meet our absolute magnitude criterion as QSOs.

1. INTRODUCTION

This is the third in a series of five papers presenting the Large Bright QSO Survey (LBQS), which is aimed at yielding a sample of ~ 1000 QSOs of a wide variety of types in the range $16.0 \leqslant B_J \lesssim 18.7$ using well defined and consistently applied selection criteria. Candidates are selected from machine-scanned UK Schmidt Telescope (UKST) direct and objective-prism plates, and follow-up spectroscopy is obtained on the MMT. The scientific objectives, selection criteria, and observing procedures for the survey have been described by Foltz *et al.* [1987 (Paper I) and 1989 (Paper II)] and will not be repeated here. As of summer 1990, the LBQS is 99% complete, with only a few objects with low signal-to-noise ratio spectra requiring additional integration to complete the sample.

This paper reports observations of QSO candidates in six new equatorial fields, as well as supplementary observations of the Virgo fields reported in Paper I. Section 2 describes the observations and presents coordinates, magnitudes, and spectra for each of the confirmed 336 QSOs and 9 AGNs in the equatorial fields along with 29 new QSOs in the Virgo fields. In Sec. 3 we present a comparison of the LBQS sample with QSOs in our fields listed in the Hewitt–Burbidge catalog and update the redshift distribution for the published LBQS sample.

2. OBSERVATIONS

2.1 Plate Material and Candidate Selection

Six pairs of direct and objective-prism UKST plates were searched for QSO candidates, and additional candidates in the four Virgo plates reported in Paper I were observed. The characteristics of plates in the six new fields are presented in Table 1. The physical area scanned by the Automated Plate Measuring facility in each field is $\sim 5.8° \times 5.8°$, but areas excluded from processing around bright stars and near calibration wedges reduce the area to 190 square degrees. Furthermore, approximately 11% of the spectra cannot be processed because of the presence of nearby overlapping spectra or satellite trails, etc., and are eliminated from consideration prior to the search for QSO candidates. This results in an effective area of 169 square degrees, the figure that should be used for surface density and luminosity function

[1]Observations reported here were obtained, in the main, with the Multiple Mirror Telescope, a facility operated jointly by the University of Arizona and the Smithsonian Institution.

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 0004-6256/91/041121-62$00.90

TABLE 1. Plate data.[a]

Plate No.	R.A.	Dec.	Filter	Exp. Time[b]	Date	Grade[c]	Seeing	$B_{J_{lim}}$
J10147	10 20	00 00	GG395	65	11 May 1985	AIE3	2.0	18.68
UJ11746P	10 20	00 00	none	65	01 Apr 1987	AI3	2.0	
J9301	11 40	00 00	GG395	60	23 May 1984	BI3	3.0	18.62
UJ11757P	11 40	00 00	none	65	02 Apr 1987	AP2	2.0	
J5023	12 40	00 00	GG395	65	19 May 1979	AI2	2.5	18.49
UJ5853P	12 40	00 00	none	45	14 Apr 1980	AR3	2.0	
J11048	13 20	00 00	GG395	27	16 Apr 1986	A	2.5	18.80
UJ11759P	13 20	00 00	none	65	02 Apr 1987	AP1	2.0	
J9108	13 40	00 00	GG395	60	07 Mar 1984	AI3	3.0	18.41
UJ6997P	13 40	00 00	none	55	04 May 1981	AI3	2.0	
J5773	14 40	00 00	GG395	72	19 Mar 1980	A0	2.0	18.61
UJ11760P	14 40	00 00	none	65	02 Apr 1987	AI2	2.0	

Notes to TABLE 1

[a] All plates are Kodak IIIa-J emulsion.

[b] All exposure times are in minutes.

[c] Details of the UKST grading system can be found in the UKST Handbook (1983).

calculations. Candidates fainter than $B_J = 16.0$ and brighter than the limiting magnitudes of the objective-prism spectrum catalogs in each field (Table 1) were observed. As in Paper II, we now include candidates which exhibit evidence for extended image structure. The principles behind our selection of QSO candidates and the selection procedures themselves remain unchanged from those employed in Paper II to which the reader is referred for details.

The additional QSOs in the Virgo region result from (a) searching the Virgo fields for objects possessing evidence of extended image structure, a procedure that has now been consistently applied to all the LBQS fields, (b) observation of a small number of candidates from the original search that were not obtained because of follow-up telescope time restrictions, and (c) an experiment carried out using the UJ10749P Virgo plate in which all spectra blueward of one of our principal spectrum "color" selection criterion were observed—unless the spectra showed strong unambiguous evidence for Balmer absorption. The detailed results of this experiment will be included in a future paper when we consider quantitative estimates of the survey completeness.

2.2 Magnitude Calibration

As described in Paper II, instrumental B_J magnitudes from the UKST direct IIIa-J plates were calibrated using secondary CCD photometric calibration sequences we have established in each field. The limiting magnitudes for the fields are in the range $18.4 < B_J \leqslant 18.8$ and are tabulated in Table 1. Note that minor changes to the limiting magnitude of the Virgo fields have been made now that additional CCD standards have become available. The recalibration affects the magnitudes by an amount less than the quoted rms error of ~ 0.15 mag for the QSOs. The new magnitude limits for the four Virgo objective-prism catalogs are: plate UJ10732P, $B_J = 18.67$, plate UJ10742P, $B_J = 18.75$, plate UJ10738P, $B_J = 18.64$ and plate UJ10749P, $B_J = 18.85$.

2.3 QSOs Detected and Redshift Determinations

Six-angstrom resolution spectra were obtained of each candidate with the Blue Channel of the MMT Spectrograph on the MMT, at a moderate signal to noise that is as uniform as possible for all QSOs in the LBQS. Of the 616 candidates in the non-Virgo fields observed at the MMT, 336 were found to be QSOs. Furthermore, an additional 29 QSOs were found in the Virgo fields as a result of the selection criteria described above. All QSOs are listed in Table 2 in order of right ascension. Column 1 gives the name, columns 2 and 3: the celestial coordinates (epoch 1950.0); column 4: the emission-line redshift; column 5: the B_J magnitude; column

TABLE 2. Confirmed QSOs.

Designation	R.A. (1950)	Dec. (1950)	z_{em}	B_J	UT Date	Comment
1009+0222	10 09 13.98	+02 22 20.8	1.349	18.6	03/04/89	b
1009–0252	10 09 43.58	–02 52 11.6	2.745	17.6	02/24/90	
1010+0219	10 10 37.19	+02 19 07.8	0.222	17.7	02/08/89	
1011–0144	10 11 41.30	–01 44 23.2	2.236	17.9	02/08/89	
1011–0157	10 11 54.04	–01 57 33.8	1.378	18.1	03/04/89	
1012–0206	10 12 33.91	–02 06 21.3	2.135	18.5	03/04/89	u
1012+0213	10 12 40.77	+02 13 48.5	1.378	17.6	02/08/89	HB
1013–0149	10 13 06.41	–01 49 02.5	0.760	18.2	03/04/89	
1013+0124	10 13 22.61	+01 24 10.7	0.779	16.6	02/24/90	
1013–0020	10 13 22.75	–00 20 07.9	1.787	18.6	02/24/90	
1013–0200	10 13 34.94	–02 00 40.2	0.977	18.5	02/24/90	n
1013–0121	10 13 48.49	–01 21 58.5	0.617	18.4	03/04/89	o,c
1014+0023	10 14 02.05	+00 23 49.3	2.292	18.2	03/04/89	n,a?
1014+0007	10 14 24.86	+00 07 50.4	0.337	18.5	02/25/90	
1015+0147	10 15 07.77	+01 47 17.5	1.455	18.3	03/04/89	
1015–0121	10 15 37.98	–01 21 00.4	0.319	18.4	02/25/90	
1015–0019	10 15 47.34	–00 19 30.3	1.508	18.4	03/04/89	
1016+0152	10 16 24.64	+01 52 34.1	0.916	18.4	02/25/90	
1016–0039	10 16 26.59	–00 39 17.4	2.176	18.7	03/04/89	n
1016–0248	10 16 28.55	–02 48 47.3	0.717	18.5	03/04/89	n,b??,a
1017–0009	10 17 23.13	–00 09 05.5	1.127	17.5	02/25/90	
1018+0115	10 18 25.42	+01 15 40.9	0.588	18.5	03/04/89	n,o,c
1018–0005	10 18 25.92	–00 05 20.0	2.596	18.3	03/04/89	
1019+0147	10 19 44.42	+01 47 27.6	0.792	17.3	02/08/89	
1020+0126	10 20 13.06	+01 26 02.6	1.615	18.1	03/04/89	
1020–0128	10 20 14.99	–01 28 05.4	0.838	18.5	03/04/89	
1020+0028	10 20 56.02	+00 28 20.6	1.901	18.6	03/04/89	
1021–0250	10 21 24.55	–02 50 31.2	0.496	17.4	02/08/89	
1021–0236	10 21 27.17	–02 36 21.8	1.102	17.8	02/08/89	
1021–0107	10 21 30.11	–01 07 24.4	0.787	18.3	03/04/89	
1021–0118	10 21 39.16	–01 18 36.1	0.743	17.9	02/24/90	
1022–0005	10 22 16.87	–00 05 49.4	0.323	18.3	03/04/89	n
1022–0002	10 22 23.76	–00 02 28.9	1.492	17.4	02/08/89	
1022+0046	10 22 28.68	+00 46 40.3	0.363	18.6	02/24/90	n
1022+0051	10 22 32.19	+00 51 06.7	0.986	18.4	03/04/89	
1023–0040	10 23 08.98	–00 40 29.3	1.763	18.6	03/04/89	
1023–0135	10 23 27.07	–01 35 03.4	0.738	18.6	02/27/90	
1024+0030	10 24 03.01	+00 30 46.4	2.167	18.6	03/04/89	
1024–0057	10 24 50.77	–00 57 43.0	1.267	18.5	03/04/89	
1024–0116	10 24 57.05	–01 16 02.3	0.322	18.2	03/04/89	

TABLE 2. (continued)

Designation	R.A. (1950)	Dec. (1950)	z_{em}	B_J	UT Date	Comment
1025+0218	10 25 10.65	+02 18 45.8	0.745	18.6	02/26/90	
1025+0046	10 25 19.81	+00 46 13.7	1.129	18.6	03/04/89	
1025−0245	10 25 38.60	−02 45 54.2	1.283	17.7	02/08/89	
1025+0145	10 25 41.47	+01 45 25.3	1.055	18.4	02/24/90	
1025−0030	10 25 58.66	−00 30 47.5	2.872	18.5	03/04/89	L
1026−0045A	10 26 01.67	−00 45 24.0	1.438	18.5	03/04/89	
1026−0045B	10 26 03.69	−00 45 07.8	1.520	18.4	02/05/90	u
1026−0144	10 26 24.32	−01 44 02.7	0.217	17.1	02/08/89	
1027−0114	10 27 23.83	−01 14 14.7	0.958	17.6	02/08/89	
1027−0058	10 27 43.69	−00 58 09.5	1.470	18.4	03/04/89	
1029−0125	10 29 16.49	−01 25 46.2	2.029	18.4	03/04/89	b
1030−0050	10 30 03.59	−00 50 44.8	1.264	16.9	02/24/90	
1127+0037	11 27 57.66	+00 37 07.7	0.993	18.2	03/04/89	n
1128−0220	11 28 03.62	−02 20 56.4	0.580	18.3	03/16/88	o,c
1128+0022	11 28 32.77	+00 22 12.0	1.379	18.0	03/16/88	
1129−0218	11 29 07.84	−02 18 50.1	1.246	17.4	03/21/88	f
1129+0009	11 29 42.81	+00 09 42.3	0.961	18.3	03/16/88	
1129−0229	11 29 56.65	−02 29 46.8	0.333	17.7	03/16/88	u
1130+0018	11 30 14.40	+00 18 30.7	1.255	18.2	03/04/89	
1130+0032	11 30 29.14	+00 32 24.1	1.173	18.6	03/04/89	
1131+0114	11 31 11.67	+01 14 49.0	1.939	18.4	01/23/88	b??,l,d?
1131−0112	11 31 22.15	−01 12 38.5	1.251	18.4	03/16/88	
1131−0043	11 31 39.22	−00 43 12.5	2.160	18.6	03/16/88	s
1131−0039	11 31 58.55	−00 39 13.1	0.268	17.9	03/16/88	
1132−0302	11 32 31.46	−03 02 15.8	0.237	17.0	03/16/88	
1132−0054	11 32 41.28	−00 54 37.1	2.756	18.0	03/16/88	
1132−0013	11 32 49.18	−00 13 21.5	0.955	17.7	03/21/88	
1132−0053	11 32 54.73	−00 53 47.7	1.354	18.3	02/20/88	
1133+0214	11 33 57.84	+02 14 37.9	1.467	18.4	02/20/88	b?
1134+0152	11 34 28.05	+01 52 58.9	1.643	18.8	02/27/90	
1134−0237	11 34 41.81	−02 37 59.6	1.758	18.6	02/20/88	n
1135+0232	11 35 01.59	+02 32 10.0	0.996	18.4	02/20/88	
1135+0040	11 35 08.08	+00 40 28.4	0.721	18.4	02/20/88	
1135+0044	11 35 15.90	+00 44 12.5	0.803	17.5	01/23/88	f
1135−0255	11 35 26.87	−02 55 11.4	2.407	18.3	02/20/88	
1135+0156	11 35 49.75	+01 56 02.4	1.043	18.7	02/27/90	
1135+0151	11 35 58.04	+01 51 04.5	0.380	18.0	03/16/88	u
1136−0109	11 36 30.76	−01 09 47.5	1.378	18.5	03/16/88	b?
1136+0141	11 36 45.04	+01 41 34.9	0.644	18.6	04/30/89	o,c,a?
1137+0051	11 37 09.22	+00 51 59.1	0.874	18.3	01/23/88	

TABLE 2. (continued)

Designation	R.A. (1950)	Dec. (1950)	z_{em}	B_J	UT Date	Comment
1137–0048	11 37 30.66	–00 48 49.8	0.347	18.0	01/23/88	
1137+0110	11 37 42.81	+01 10 29.7	1.138	18.2	03/16/88	
1138–0107	11 38 08.63	–01 07 30.2	2.756	18.1	03/16/88	
1138+0015	11 38 09.88	+00 15 11.6	1.760	18.6	02/20/88	
1138–0126	11 38 37.98	–01 26 28.7	1.266	18.5	02/20/88	n,a,b??
1138+0003	11 38 43.87	+00 03 48.0	0.500	17.9	01/23/88	
1138+0204	11 38 47.81	+02 04 42.7	0.383	17.6	01/23/88	
1138+0216	11 38 53.15	+02 16 12.0	0.687	18.6	03/16/88	o,c
1139+0106	11 39 24.66	+01 06 05.9	0.462	18.3	04/30/89	
1139–0243	11 39 32.21	–02 43 45.2	1.132	18.4	03/16/88	
1139–0139	11 39 36.26	–01 39 47.1	1.925	18.5	03/16/88	u
1139–0037	11 39 37.87	–00 37 05.9	1.913	18.4	02/20/88	
1139–0257	11 39 37.91	–02 57 36.0	1.027	18.0	03/16/88	u
1140+0228	11 40 45.65	+02 28 25.7	0.451	18.2	03/16/88	
1141–0038	11 41 13.40	–00 38 09.8	0.520	18.5	03/16/88	o,c
1141–0222	11 41 21.90	–02 22 00.3	1.394	18.1	03/16/88	u
1141+0227	11 41 33.34	+02 27 18.7	0.217	17.7	03/21/88	
1141+0133	11 41 49.65	+01 33 56.0	1.756	18.3	01/23/88	
1142+0138	11 42 06.41	+01 38 23.2	2.424	18.6	02/20/88	a,n
1142+0139	11 42 31.92	+01 39 20.3	1.139	18.3	03/16/88	
1142–0218	11 42 52.62	–02 18 05.8	0.446	18.4	03/16/88	
1143+0142	11 43 17.77	+01 42 46.4	2.281	18.5	02/20/88	s
1143+0241	11 43 31.38	+02 41 18.5	0.963	18.6	02/20/88	u
1144+0030	11 44 13.93	+00 30 30.4	0.941	18.4	02/20/88	
1144+0140	11 44 26.06	+01 40 32.3	2.587	18.5	02/20/88	
1144–0115	11 44 44.37	–01 15 27.7	0.382	18.1	04/30/89	
1145–0039	11 45 11.85	–00 39 29.7	1.942	18.1	01/23/88	
1145+0015	11 45 15.89	+00 15 30.3	1.263	18.4	01/23/88	
1145+0121	11 45 18.82	+01 21 10.8	2.076	18.6	02/20/88	
1145–0049	11 45 21.85	–00 49 09.3	1.253	18.6	03/04/89	
1145–0216	11 45 31.69	–02 16 24.4	0.566	17.8	04/30/89	u,o,c
1145+0120	11 45 43.07	+01 20 37.9	1.620	18.6	03/16/88	
1145+0235	11 45 56.20	+02 35 10.1	1.216	17.9	03/04/89	
1146–0218	11 46 04.86	–02 18 44.9	1.347	18.5	02/20/88	
1146+0207	11 46 26.44	+02 07 57.4	2.055	18.3	01/23/88	
1146–0128	11 46 40.25	–01 28 14.5	0.461	16.6	02/20/88	
1147+0202	11 47 10.59	+02 2 23.3	1.460	18.4	03/16/88	
1147+0147	11 47 44.46	+01 47 16.1	1.007	18.6	02/20/88	u
1148–0007	11 48 10.14	–00 07 14.2	1.977	17.3	01/23/88	HB, UM458,n
1148–0033	11 48 18.58	–00 33 36.3	0.800	17.7	01/23/88	f

TABLE 2. (continued)

Designation	R.A. (1950)	Dec. (1950)	z_{em}	B_J	UT Date	Comment
1148+0055	11 48 41.61	+00 55 07.6	1.887	18.1	03/17/88	
1149+0043	11 49 49.60	+00 43 08.3	0.466	17.0	03/21/88	o,c
1150+0127	11 50 05.45	+01 27 58.8	1.635	17.7	03/21/88	
1150+0041	11 50 12.78	+00 41 20.9	0.780	17.6	01/23/88	f
1150−0054	11 50 33.25	−00 54 16.8	1.327	18.3	03/16/88	
1203+1530	12 03 52.81	+15 30 17.0	1.629	18.7	04/30/89	b
1207+1032	12 07 03.80	+10 32 49.8	1.746	18.1	04/30/89	
1209+1259	12 09 54.90	+12 59 35.2	0.418	18.5	04/30/89	
1211+1153	12 11 32.05	+11 53 50.4	1.181	18.2	04/30/89	
1212+1121	12 12 17.12	+11 21 01.1	1.279	18.5	03/17/88	u
1212+1217	12 12 21.24	+12 17 10.6	0.871	18.6	03/15/88	
1213+1015	12 13 05.87	+10 15 25.7	2.517	18.3	03/17/88	
1213+1527	12 13 50.72	+15 27 43.3	1.159	18.5	04/30/89	
1215+1420	12 15 50.71	+14 20 18.1	1.604	18.2	04/30/89	
1216+1233	12 16 02.42	+12 33 52.3	1.592	18.7	04/30/89	
1217+1236	12 17 41.62	+12 36 58.5	1.047	18.5	04/30/89	
1217+1005	12 17 58.93	+10 05 31.8	0.994	18.3	04/30/89	
1219+1244	12 19 49.33	+12 44 56.8	1.308	18.7	04/30/89	b
1226+1526	12 26 16.43	+15 26 53.2	1.122	18.2	05/10/88	
1228−0130	12 28 17.04	−01 30 30.6	0.706	18.1	04/02/87	
1229+0834	12 29 01.37	+08 34 31.0	0.766	18.6	05/10/88	u
1229−0207	12 29 25.90	−02 07 32.8	1.045	17.6	04/02/87	HB,f
1229+0106	12 29 36.07	+01 06 47.6	0.477	18.0	04/02/87	
1230−0015	12 30 30.20	−00 15 03.0	0.470	17.0	04/18/90	
1230+1627A	12 30 39.06	+16 27 58.7	0.918	18.7	05/10/88	
1230+1705	12 30 39.77	+17 05 38.0	1.419	18.4	05/10/88	b
1231+1627	12 31 25.50	+16 27 25.1	0.999	18.8	05/10/88	
1231−0209	12 31 30.62	−02 09 56.9	1.443	18.3	04/02/87	u
1232−0051	12 32 36.64	−00 51 15.4	2.783	18.4	04/02/87	s
1233+0040	12 33 29.17	+00 40 12.8	1.573	18.4	04/02/87	
1234−0212	12 34 05.67	−02 12 06.7	0.305	18.0	04/30/89	n
1234+1429	12 34 06.19	+14 29 47.1	1.596	18.4	05/09/88	
1234−0209	12 34 14.28	−02 09 36.1	1.606	17.7	04/30/89	a?
1234+0122	12 34 51.01	+01 22 43.7	2.026	18.0	04/02/87	u?
1235−0019	12 35 15.74	−00 19 15.5	0.944	18.3	02/27/90	
1235+1557	12 35 25.07	+15 57 33.1	1.159	18.7	03/18/88	
1235+0216	12 35 39.66	+02 16 47.6	0.672	17.6	04/30/89	u,b??,a?
1236+1802	12 36 05.28	+18 02 12.2	0.517	18.7	05/10/88	
1236−0043	12 36 22.18	−00 43 03.3	1.843	18.5	04/02/87	
1236+0128	12 36 38.03	+01 28 40.9	1.261	17.6	04/30/89	HB,b??

TABLE 2. (continued)

Designation	R.A. (1950)	Dec. (1950)	z_{em}	B_J	UT Date	Comment
1236–0207	12 36 53.81	–02 07 03.8	2.245	18.2	03/17/88	
1237+0216	12 37 17.30	+02 16 50.2	0.336	18.5	03/17/88	
1237+0107	12 37 37.23	+01 07 55.7	1.808	18.3	04/02/87	HB, UM510
1237+0204	12 37 58.45	+02 04 42.2	0.665	17.5	04/02/87	
1238+1401	12 38 11.38	+14 01 41.3	0.641	18.4	04/30/89	o,c
1238+0039	12 38 34.80	+00 39 22.7	1.361	18.2	04/02/87	HB, UM511
1239–0231	12 39 22.99	–02 31 06.6	1.234	17.7	04/30/89	b??
1239+0028	12 39 28.96	+00 28 54.1	1.214	17.5	04/02/87	b?
1239+0249	12 39 46.92	+02 49 22.5	2.216	18.5	04/02/87	
1240+0246	12 40 11.40	+02 46 19.1	0.934	18.1	04/02/87	
1240+0224	12 40 13.90	+02 24 42.1	0.790	17.9	04/02/87	
1240+1551	12 40 30.51	+15 51 36.8	0.573	18.8	03/18/88	a
1240+1607	12 40 33.35	+16 07 13.6	2.365	18.8	05/10/88	b
1240+1746	12 40 56.64	+17 46 00.9	0.549	18.0	05/10/88	
1241+0107	12 41 37.99	+01 07 01.9	0.786	18.4	04/02/87	
1241–0048	12 41 41.85	–00 48 05.9	1.314	18.2	04/30/89	u
1242+1735	12 42 05.87	+17 35 57.7	1.592	18.8	05/10/88	
1242–0123	12 42 22.12	–01 23 10.6	0.491	17.3	04/30/89	u
1242+0213	12 42 43.17	+02 13 03.5	1.988	18.3	04/02/87	
1242+0006	12 42 50.82	+00 06 44.5	2.076	17.7	04/02/87	HB, UM516
1242+1719	12 42 51.97	+17 19 32.5	0.540	18.6	05/10/88	n
1242+1330	12 42 55.08	+13 30 09.6	0.931	18.5	05/10/88	
1243+0234	12 43 00.70	+02 34 29.0	0.718	18.0	04/02/87	
1243–0011	12 43 07.13	–00 11 22.5	1.682	18.2	04/02/87	
1243+0121	12 43 17.95	+01 21 27.2	2.798	18.5	04/02/87	b
1244+1358	12 44 04.58	+13 58 58.4	0.601	18.8	05/10/88	
1244+0240	12 44 08.53	+02 40 32.9	0.934	17.9	04/02/87	
1244–0126	12 44 56.81	–01 26 06.6	0.347	17.6	12/29/86	
1246–0059	12 46 06.02	–00 59 15.7	2.450	17.9	12/29/86	
1246+0032	12 46 25.98	+00 32 05.1	2.306	18.1	04/02/87	HB, UM520
1246–0217	12 46 50.47	–02 17 20.2	2.106	18.1	12/29/86	d
1247–0213	12 47 13.19	–02 13 09.2	1.312	18.0	04/02/87	
1249+0018	12 49 06.60	+00 18 28.4	0.878	18.1	04/02/87	
1250+0109	12 50 22.49	+01 09 55.8	0.792	18.4	04/02/87	
1308–0111	13 08 21.28	–01 11 29.6	1.003	18.7	04/18/88	
1308+0047	13 08 34.87	+00 47 48.0	0.428	18.6	05/10/88	u
1308–0214	13 08 40.24	–02 14 51.1	2.850	18.7	04/30/89	l,L
1308–0104	13 08 44.97	–01 04 36.2	2.585	18.1	03/16/88	l
1308+0109	13 08 47.70	+01 09 15.7	1.074	18.1	04/18/88	
1308+0142	13 08 50.77	+01 42 39.8	0.507	18.8	04/18/88	n

TABLE 2. (continued)

Designation	R.A. (1950)	Dec. (1950)	z_{em}	B_J	UT Date	Comment
1308+0105	13 08 54.88	+01 05 25.9	2.801	18.8	03/16/88	
1310–0231	13 10 16.98	–02 31 44.9	0.871	18.4	03/21/88	u
1311+0121	13 11 19.47	+01 21 04.0	1.536	18.7	03/16/88	
1311–0257	13 11 26.14	–02 57 51.6	1.300	18.5	03/21/88	
1311+0131	13 11 32.12	+01 31 38.8	0.781	18.4	04/18/88	
1311+0217	13 11 53.50	+02 17 07.5	0.306	17.0	05/10/88	u
1313–0142	13 13 04.19	–01 42 56.7	1.498	18.8	04/18/88	
1313–0228	13 13 15.36	–02 28 08.5	0.704	18.6	03/16/88	u
1313+0020	13 13 18.94	+00 20 44.3	0.735	18.3	04/18/88	
1313+0111	13 13 25.56	+01 11 01.1	1.569	18.2	03/16/88	
1313–0138	13 13 35.29	–01 38 15.0	0.406	17.7	05/10/88	u
1313+0107	13 13 57.04	+01 07 14.7	2.393	18.1	03/16/88	HB, UM556
1314–0008	13 14 14.07	–00 08 45.3	1.746	18.1	03/16/88	
1314+0116	13 14 40.87	+01 16 01.2	2.687	18.6	03/16/88	HB, UM557, b
1314–0216	13 14 51.38	–02 16 04.0	1.089	18.5	03/17/88	
1314–0232	13 14 53.86	–02 32 13.1	1.435	18.8	03/16/88	
1315+0002	13 15 11.08	+00 02 56.5	0.916	18.1	04/18/88	
1315+0150	13 15 28.62	+01 50 08.8	0.538	18.6	05/10/88	o,c,u
1315+0127	13 15 37.47	+01 27 28.0	1.628	17.9	05/18/88	u
1315+0140	13 15 41.94	+01 40 37.6	0.689	18.0	04/30/89	
1315+0014	13 15 44.01	+00 14 00.2	0.889	18.8	03/16/88	
1316+0023	13 16 06.51	+00 23 21.3	0.491	17.9	05/10/88	
1316+0103	13 16 10.43	+01 03 18.3	0.394	18.5	04/30/89	
1316+0044	13 16 34.58	+00 44 29.5	1.129	18.8	03/16/88	
1317–0033	13 17 04.69	–00 33 55.5	0.892	18.2	04/18/88	HB
1317–0142	13 17 15.81	–01 42 20.3	0.225	17.3	05/10/88	u
1317–0018	13 17 46.30	–00 18 44.7	0.354	17.8	04/18/88	
1317–0204	13 17 53.02	–02 04 30.3	2.422	18.8	03/16/88	
1318+0100	13 18 04.10	+01 00 23.1	1.101	18.6	03/16/88	
1318–0006	13 18 34.74	–00 06 31.4	1.582	18.5	03/21/88	
1318+0230	13 18 39.47	+02 30 12.5	1.650	18.8	05/10/88	
1318–0150	13 18 53.27	–01 50 41.4	2.010	18.7	03/16/88	s
1319+0039	13 19 05.99	+00 39 39.5	1.619	17.9	03/21/88	
1319–0019	13 19 14.14	–00 19 35.6	1.161	18.6	05/10/88	
1319+0033	13 19 32.59	+00 33 41.1	0.536	18.0	03/21/88	
1319–0106	13 19 40.74	–01 06 55.9	1.452	18.7	05/10/88	u
1319+0110	13 19 41.46	+01 10 01.2	2.151	18.8	03/16/88	
1320–0033	13 20 01.92	–00 33 32.2	1.144	18.5	04/28/88	
1320+0048	13 20 41.01	+00 48 30.9	1.955	18.2	03/17/88	
1320–0006	13 20 49.90	–00 06 16.2	1.388	18.2	05/10/88	u

TABLE 2. (continued)

Designation	R.A. (1950)	Dec. (1950)	z_{em}	B_J	UT Date	Comment
1320+0103	13 20 59.64	+01 03 29.6	1.777	18.1	03/16/88	
1321–0213	13 21 02.35	–02 13 15.8	0.990	18.8	04/30/89	u
1321–0145	13 21 18.27	–01 45 24.4	0.224	17.7	03/17/88	
1322–0128	13 22 29.74	–01 28 53.5	1.168	18.6	03/16/88	
1322+0154	13 22 38.42	+01 54 31.7	1.344	18.8	04/18/88	
1322–0204	13 22 53.21	–02 04 14.6	0.573	18.5	05/10/88	
1323+0205	13 23 08.53	+02 05 46.2	0.641	18.5	04/18/88	o,c
1323–0248	13 23 40.11	–02 48 24.6	2.121	17.4	03/21/88	u,a?
1323+0225	13 23 48.10	+02 25 41.8	1.537	18.8	04/18/88	
1323–0138	13 23 59.09	–01 38 59.0	1.146	18.1	03/21/88	
1324–0212	13 24 03.34	–02 12 27.3	1.886	18.5	04/18/88	
1324–0125	13 24 35.12	–01 25 05.4	1.488	18.4	03/21/88	
1324+0125	13 24 37.89	+01 25 43.2	0.970	18.7	03/16/88	
1324+0039	13 24 39.30	+00 39 47.6	1.061	18.2	04/18/88	
1324+0126	13 24 50.82	+01 26 57.1	0.864	18.1	03/21/88	
1325+0027	13 25 16.81	+00 27 29.1	2.540	18.7	04/30/89	
1325–0038	13 25 37.25	–00 38 11.6	0.957	18.6	03/25/88	
1325+0207	13 25 38.08	+02 07 54.9	1.464	18.6	04/18/88	
1326+0206	13 26 10.51	+02 06 50.5	0.345	17.3	05/10/88	o
1326–0249	13 26 14.93	–02 49 21.1	1.406	18.7	03/16/88	b??
1326–0257	13 26 20.86	–02 57 02.5	0.743	18.1	04/18/88	
1327+0055	13 27 10.92	+00 55 34.1	2.299	18.3	03/16/88	
1328+0223	13 28 15.65	+02 23 18.4	2.154	18.7	03/16/88	
1328+0047	13 28 18.89	+00 47 45.7	1.446	18.4	03/21/88	
1328+0205	13 28 58.67	+02 05 12.4	0.692	18.1	03/21/88	
1329+0242	13 29 25.20	+02 42 06.4	1.583	17.8	03/16/88	
1329+0231	13 29 29.80	+02 31 17.5	2.434	18.8	03/16/88	
1329+0018	13 29 41.34	+00 18 17.4	2.352	18.2	03/16/88	
1329–0151	13 29 48.70	–01 51 00.8	0.370	18.6	04/30/89	n
1329–0007	13 29 57.14	–00 07 55.1	0.960	18.4	04/18/88	u
1330–0105	13 30 13.65	–01 05 56.1	1.898	18.7	02/16/88	
1330–0156	13 30 44.79	–01 56 53.6	0.889	18.8	04/18/88	u
1330+0113	13 30 48.60	+01 13 47.8	1.511	18.1	03/16/88	
1331–0108	13 31 53.66	–01 08 29.0	1.883	17.9	03/21/88	HB, UM587,b
1331–0123	13 31 58.73	–01 23 05.6	0.289	18.3	04/30/89	u
1332–0045	13 32 51.79	–00 45 10.0	0.671	17.4	03/21/88	
1333+0133	13 33 01.71	+01 33 23.8	1.577	17.9	04/18/88	a
1333+0137	13 33 48.16	+01 37 38.8	0.896	18.3	03/16/88	
1334–0033	13 34 13.03	–00 33 41.2	2.783	17.4	03/21/88	HB, UM590
1334+0212	13 34 13.78	+02 12 58.2	2.384	17.8	03/16/88	

TABLE 2. (continued)

Designation	R.A. (1950)	Dec. (1950)	z_{em}	B_J	UT Date	Comment
1334–0005	13 34 15.21	–00 05 41.3	0.298	18.1	02/20/88	
1334–0232	13 34 37.79	–02 32 38.5	0.723	17.6	04/30/89	o,c,u
1334+0053	13 34 49.18	+00 53 26.7	0.647	18.3	04/30/89	u
1334+0113	13 34 53.24	+01 13 43.9	0.330	18.3	03/17/88	
1335–0241	13 35 01.54	–02 41 54.6	0.608	18.1	03/16/88	
1335+0222	13 35 06.94	+02 22 12.5	1.354	18.4	02/20/88	HB,n
1336+0210	13 36 11.67	+02 10 16.9	1.962	18.3	02/20/88	
1337–0146	13 37 17.01	–01 46 08.0	1.014	17.5	04/18/88	HB,u,f
1338–0030	13 38 10.44	–00 30 07.6	0.387	17.2	03/21/88	
1338–0038	13 38 39.77	–00 38 07.0	0.236	17.9	03/16/88	HB
1339+0210	13 39 43.45	+02 10 25.8	0.274	17.9	04/30/89	u
1340–0020	13 40 12.25	–00 20 38.4	0.786	18.1	03/16/88	
1340–0038	13 40 17.45	–00 38 40.3	0.325	17.0	04/18/88	HB, UM602
1340+0107	13 40 25.79	+01 07 03.1	1.067	18.1	04/30/89	
1342–0000	13 42 25.60	–00 0 58.5	0.244	17.8	03/16/88	HB
1343–0221	13 43 13.05	–02 21 55.6	0.509	18.0	04/18/88	u
1343–0008	13 43 13.96	–00 08 23.8	1.095	17.9	03/21/88	
1344+0137	13 44 03.59	+01 37 12.5	1.915	17.4	03/21/88	
1344–0227	13 44 38.07	–02 27 37.2	0.511	18.3	04/18/88	u
1344+0233	13 44 51.90	+02 33 39.8	1.313	18.4	03/21/88	
1344–0105	13 44 58.06	–01 05 07.8	1.736	17.6	03/21/88	
1345–0137	13 45 14.52	–01 37 29.0	1.929	18.3	03/16/88	HB
1345–0000	13 45 17.88	–00 0 22.9	0.552	18.0	02/20/88	
1345–0120	13 45 42.11	–01 20 15.1	2.946	18.4	02/20/88	L
1346+0121	13 46 01.85	+01 21 21.0	1.930	18.4	04/18/88	
1346+0007	13 46 48.37	+00 07 55.1	1.127	18.1	03/16/88	
1346–0251	13 46 53.45	–02 51 55.6	1.714	17.7	03/16/88	
1347–0026	13 47 00.26	–00 26 10.6	0.515	17.6	03/21/88	u
1348–0054	13 48 10.37	–00 54 09.3	1.474	18.1	04/18/88	
1348+0118	13 48 55.20	+01 18 27.3	1.089	17.0	04/18/88	HB
1349+0057	13 49 59.28	+00 57 39.5	1.161	17.7	03/21/88	
1350+0052	13 50 18.81	+00 52 45.0	0.485	18.4	04/18/88	
1428+0202	14 28 08.36	+02 2 58.0	2.106	17.8	03/16/88	
1429–0100	14 29 07.22	–01 00 16.9	0.659	17.0	03/16/88	u
1429–0036	14 29 09.39	–00 36 57.7	1.179	17.8	03/21/88	b?
1429+0127	14 29 16.50	+01 27 44.6	1.091	18.1	03/16/88	
1429–0246	14 29 48.86	–02 46 36.3	0.853	18.6	04/18/88	
1429–0053	14 29 54.63	–00 53 04.1	2.078	17.7	03/16/88	
1429–0039	14 29 56.72	–00 39 17.2	0.361	18.2	06/16/90	u
1429+0137	14 29 57.80	+01 37 47.7	1.533	17.8	06/28/89	u

TABLE 2. (continued)

Designation	R.A. (1950)	Dec. (1950)	z_{em}	B_J	UT Date	Comment
1430–0046	14 30 09.92	–00 46 04.0	1.022	17.8	03/16/88	
1430–0041	14 30 46.97	–00 41 36.1	1.116	16.4	06/28/89	u
1433+0223	14 33 07.57	+02 23 49.3	2.142	18.2	03/16/88	
1433+0007	14 33 08.87	+00 07 22.2	0.965	18.4	04/30/89	u
1433+0011	14 33 46.27	+00 11 48.6	0.583	18.5	04/18/88	o,c
1433–0016	14 33 50.74	–00 16 03.3	0.325	17.8	04/30/89	n
1433–0025	14 33 54.22	–00 25 39.0	2.042	18.6	03/16/88	
1434–0038	14 34 10.67	–00 38 50.1	1.274	18.5	03/16/88	
1434–0059	14 34 15.55	–00 59 27.8	1.673	18.2	03/21/88	
1435–0134	14 35 13.23	–01 34 13.5	1.310	16.0	06/28/89	
1435+0130	14 35 24.66	+01 30 51.7	0.633	18.3	03/21/88	u
1435+0228	14 35 55.58	+02 28 01.8	1.675	18.1	03/16/88	
1436+0017	14 36 58.24	+00 17 44.8	1.399	18.3	03/16/88	
1437+0224	14 37 36.24	+02 24 30.5	0.821	17.6	03/16/88	u
1437–0143	14 37 46.74	–01 43 37.1	0.717	18.1	03/21/88	u
1437+0002	14 37 50.31	+00 02 11.5	1.408	18.5	03/16/88	
1438–0105	14 38 12.10	–01 05 02.8	1.644	18.5	04/18/88	
1438+0002	14 38 23.37	+00 02 57.2	1.441	17.8	03/16/88	u
1438+0210	14 38 27.24	+02 10 33.4	0.797	18.4	03/21/88	
1439+0047	14 39 28.52	+00 47 34.8	1.857	18.4	03/21/88	u
1440+0149	14 40 17.97	+01 49 37.7	1.169	18.2	03/16/88	
1440–0024	14 40 25.75	–00 24 41.6	1.814	17.8	03/16/88	
1440+0154	14 40 37.27	+01 54 44.2	1.359	17.2	03/16/88	u
1440–0234	14 40 38.35	–02 34 40.9	0.678	17.3	06/28/89	u,a
1440–0303	14 40 42.48	–03 3 19.4	0.754	18.6	03/16/88	u
1441+0142	14 41 27.17	+01 42 36.8	0.296	17.2	03/16/88	
1441+0134	14 41 38.36	+01 34 39.0	0.753	18.4	04/30/89	
1442–0011	14 42 40.84	–00 11 21.9	2.229	18.2	03/16/88	b
1443–0004	14 43 10.69	–00 04 40.1	1.772	18.4	03/16/88	
1443+0141	14 43 12.74	+01 41 47.8	2.451	18.2	03/16/88	b
1443–0100	14 43 24.89	–01 00 43.2	1.793	18.3	03/16/88	
1443–0207	14 43 45.75	–02 07 50.4	0.397	18.5	03/16/88	u
1443+0013	14 43 51.43	+00 13 14.4	1.017	18.4	04/18/88	
1444–0019	14 44 12.26	–00 19 11.9	0.696	18.2	03/16/88	
1444+0126	14 44 20.28	+01 26 27.7	2.206	18.5	03/16/88	
1444–0112	14 44 42.67	–01 12 12.1	2.152	18.3	03/21/88	
1444–0300	14 44 44.22	–03 00 19.0	0.548	18.4	03/21/88	u
1445–0151	14 45 06.47	–01 51 09.9	1.420	18.5	03/21/88	
1445–0231	14 45 08.81	–02 31 39.0	1.734	18.0	03/21/88	
1445+0222	14 45 14.88	+02 22 16.3	0.775	18.5	04/18/88	

TABLE 2. (continued)

Designation	R.A. (1950)	Dec. (1950)	z_{em}	B_J	UT Date	Comment
1446+0218	14 46 05.63	+02 18 54.9	0.672	17.9	03/16/88	n
1446+0027	14 46 23.23	+00 27 35.9	0.832	18.5	03/16/88	
1446+0020	14 46 34.66	+00 20 49.2	1.626	18.5	03/16/88	
1446−0035	14 46 56.22	−00 35 22.0	0.254	18.1	04/30/89	u
1448+0049	14 48 03.45	+00 49 45.0	1.079	18.6	03/16/88	f

Notes to TABLE 2
a—"Associated" absorption present, namely strong non-BAL absorption within 5000 kms^{-1} of the corresponding emission line.
b—BAL QSO; b?—probable BAL QSO; b??—possible BAL QSO.
c—If single line were CIII] λ 1909, C IV λ 1550 would be observable.
d—Damped Lyman α candidate.
f—Strong UV Fe II emission.
L—Lyman limit absorption.
l—Weak Lyman α + N V λ 1240 emission.
n—Narrow emission lines.
o—One-line redshift.
s—Weak Si IV λ 1397 emission.
u—Droop in UV may be due to atmospheric dispersion losses at large airmass.
HB—Tabulated in Hewitt and Burbidge (1987).
UMnnn—UM QSO.

6: the UT date of the MMT observation and column 7: comments on the spectrum. As in previous papers we estimate our coordinate and magnitude accuracy to be $\pm$ 1 arcsec and $\pm$ 0.15 mag, respectively.

We have refined our method of determining QSO redshifts from that used in Papers I and II. Instead of simply measuring the centroid of each prominent emission line to infer the systemic redshift, we have used the composite spectrum of 718 LBQS QSOs (Francis *et al.* 1991) as a template against which to cross correlate the spectrum of each confirmed QSO. The resulting redshifts have a higher internal precision than estimates derived from individual emission lines, and are derived from a procedure that employs all the information contained in the spectrum in a consistent and well-defined fashion. this procedure will be used in the remaining papers of this series.

Figure 1 presents flux-calibrated spectra of all objects listed in Table 2. As in Papers I and II, observations were generally made at low airmass using 2.5 arcsec apertures. To remove the effects of atmospheric refraction, which becomes a serious problem in the ultraviolet at airmasses exceeding 1.4, objects originally observed at airmasses $\geqslant$1.4 were reobserved at low airmass using 5 arcsec apertures and the original higher signal-to-noise ratio spectra were then corrected to remove any strong "ultraviolet droops." A few objects still suffer from some light loss in the ultraviolet, though mostly only at wavelengths shortward of 4000 Å. Longward of this wavelength we estimate that the relative fluxes are accurate to $\pm$ 15%.

Figure 2 and Table 3 present spectra and relevant parameters, respectively, for those extragalactic objects with $z > 0.2$ and $M_{B_J} > -21.5$, the adopted absolute magnitude threshold for the LBQS sample. In computing the absolute magnitude of the objects, a Hubble constant of 100 km s^{-1}, $q_0 = 0.0$ and k corrections assuming the QSOs are represented by a simple power-law flux distribution $F(\nu) \propto \nu^{\alpha}$, with $\alpha = -1$ have been adopted.

For completeness, Table 4 presents relevant parameters for extragalactic objects with $z < 0.2$, the adopted redshift threshold for the LBQS sample. We provide a crude classification of their spectra as either broad-lined (BLO) or narrow-lined (NLO) in lieu of displaying the spectra themselves.

3. COMPARISON WITH THE HEWITT-BURBIDGE CATALOG

The 365 QSOs presented in Table 2 combined with those presented in Papers I and II, brings us to the 70% completion level for the LBQS. As in the previous papers, to provide a crude check of the efficiency of our candidate selection procedures, we compare our list of QSOs with those found by previous investigators as tabulated in the Hewitt–Burbidge (HB) catalog (1987, 1989). We restrict our comparison to objects with redshifts greater than our adopted lower threshold of $z = 0.2$ and with HB magnitudes between 16.0 and 19.0, irrespective of the optical passband employed. We further include objects for which no magnitude is given in HB.

In the 10 LBQS fields discussed in this paper and Paper I, HB lists 72 QSOs meeting our redshift and magnitude criteria (excluding QSOs discovered by us and reported in Paper I). Of these, our procedures have identified 41, 21 of which were reported in Paper I and 20 in the present paper. The remaining 31 are listed in Table 5, where coordinates are those measured from our UKST direct plates. Nineteen objects are fainter than the limit of our broadband magnitude limited sample. A further nine have prism spectra that overlap with those of nearby objects and were not processed, leaving three objects unaccounted for (a) 1210 + 121 is the BL Lac object reported in Paper I, which our selection procedures failed to identify; (b) 1321 − 024, previously identified only from an objective-prism spectrum, we have confirmed spectroscopically to be a star; and (c) 1237 − 009, a uvx-selected QSO with = 0.82 which escaped selection as a candidate by our procedures. Its spectrum lacks strong emis-

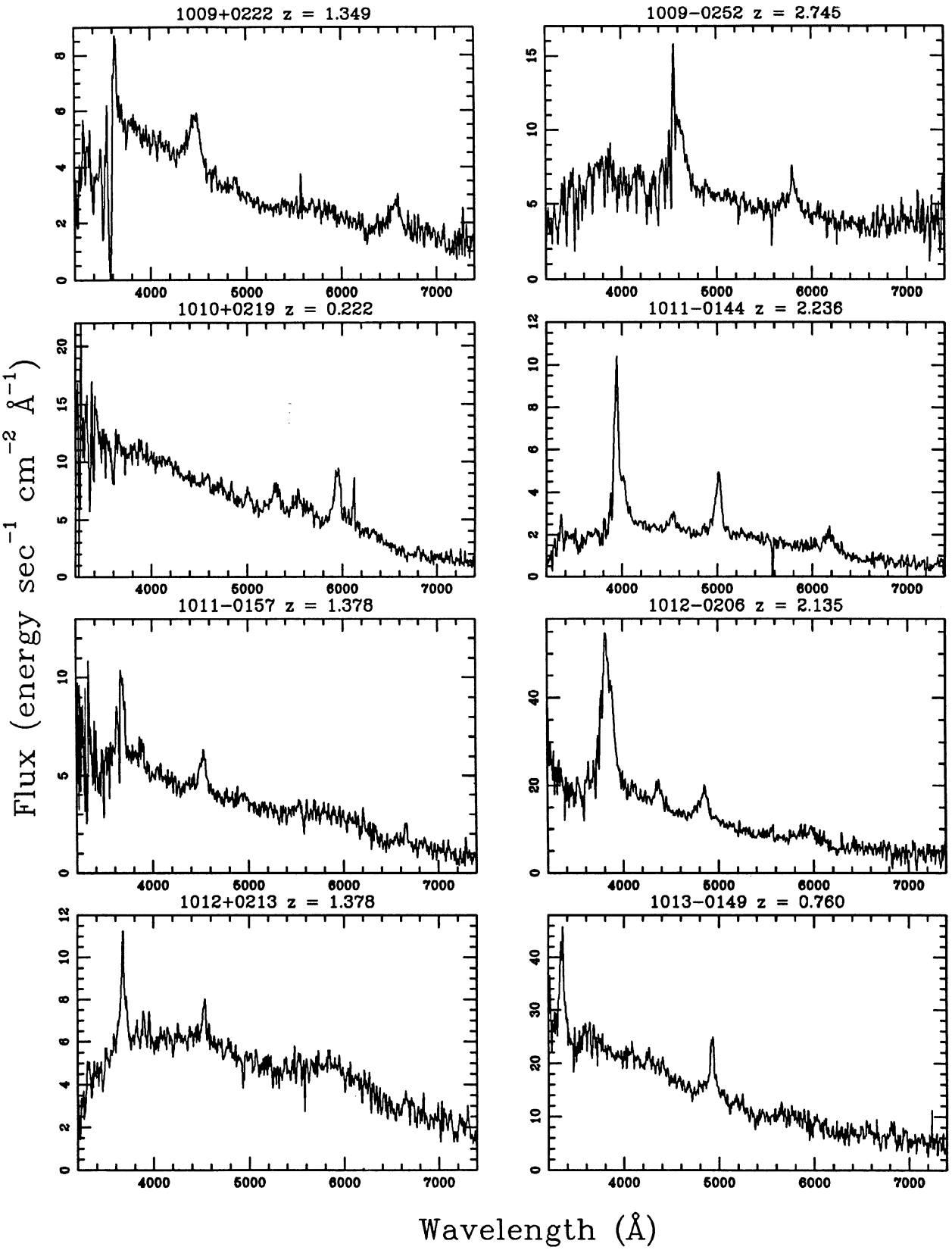

FIG. 1. Six-angstrom resolution spectra, in order of right ascension, of all confirmed QSOs. The flux scales should not be intercompared due to uncertain scale variations.

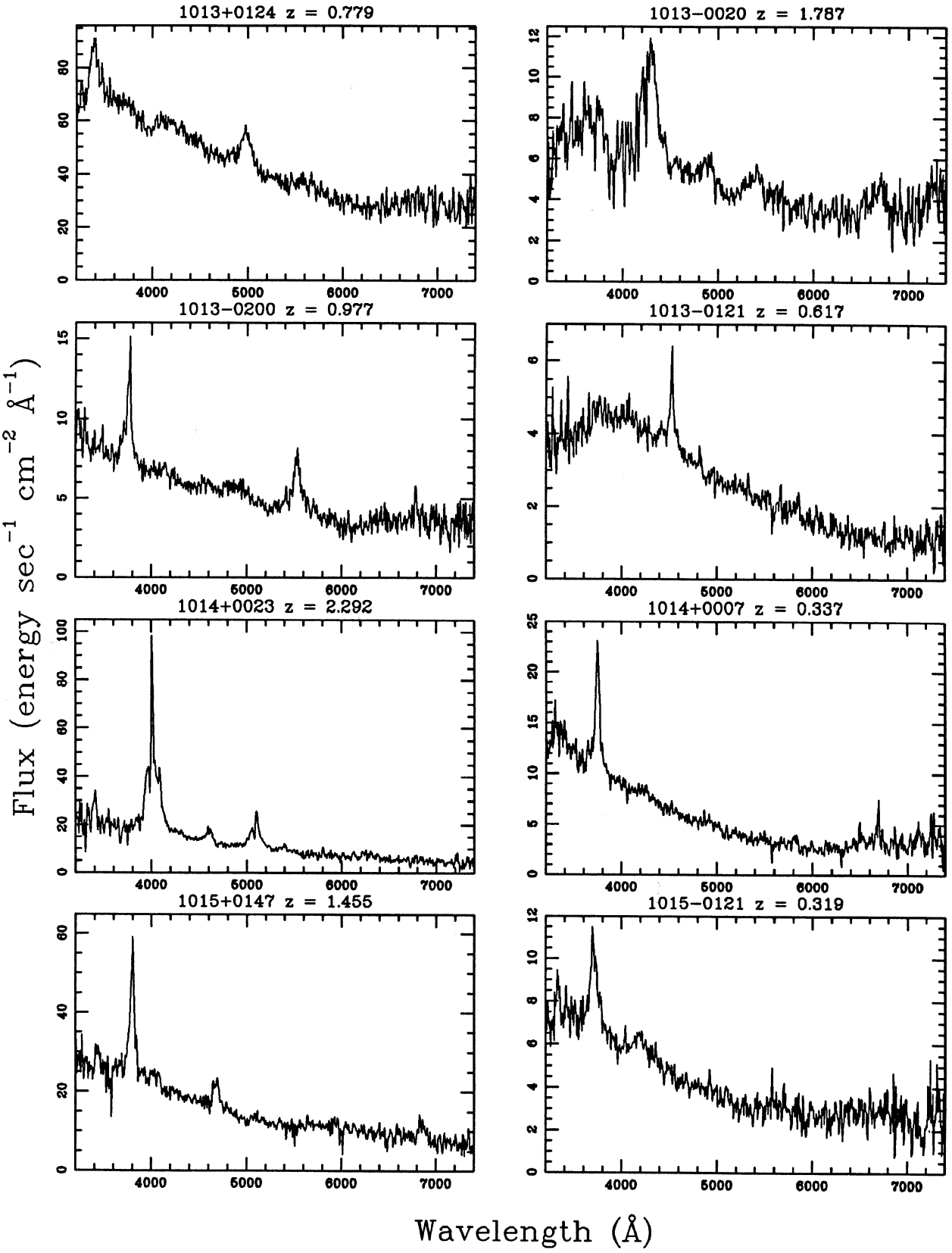

FIG. 1. (continued)

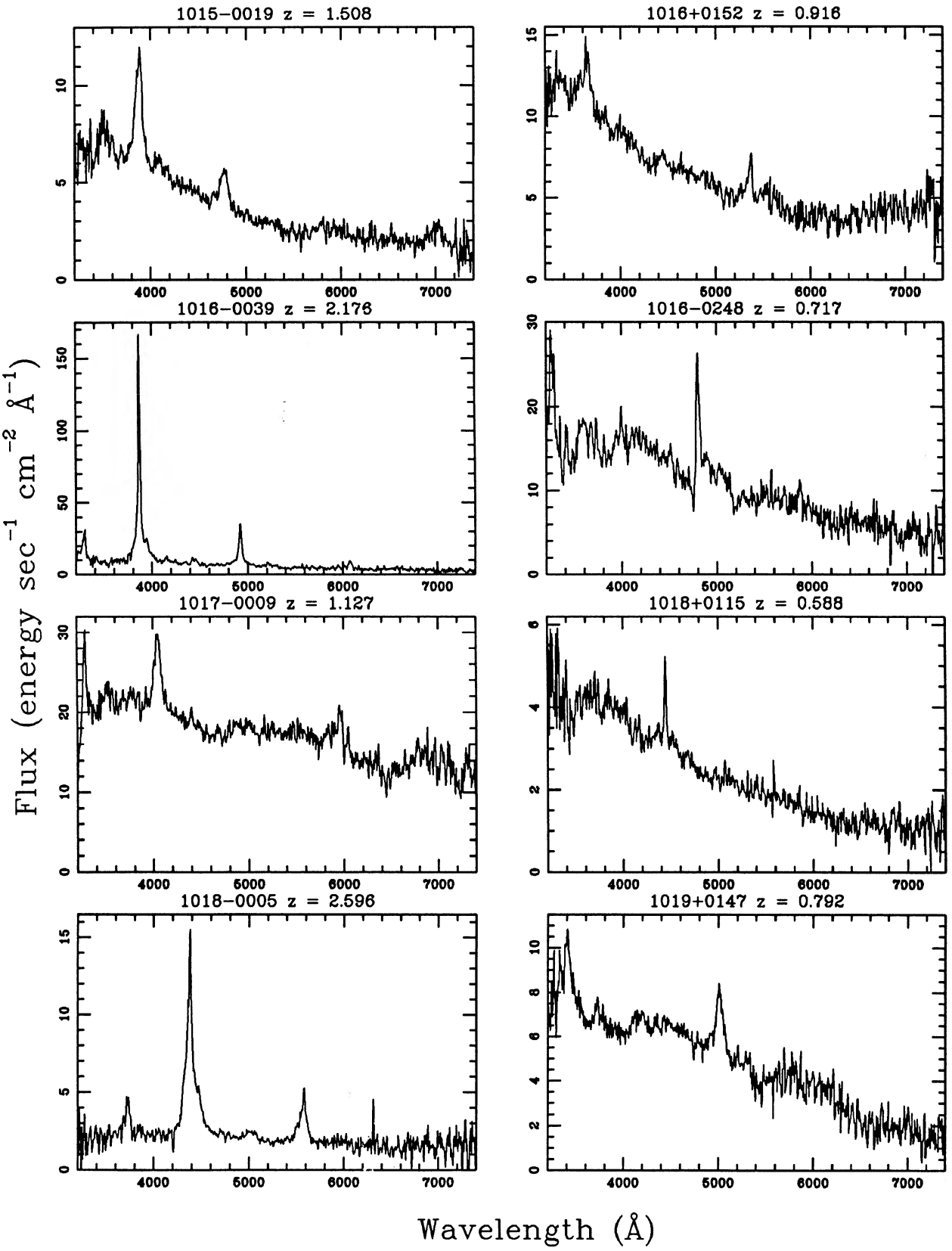

FIG. 1. (continued)

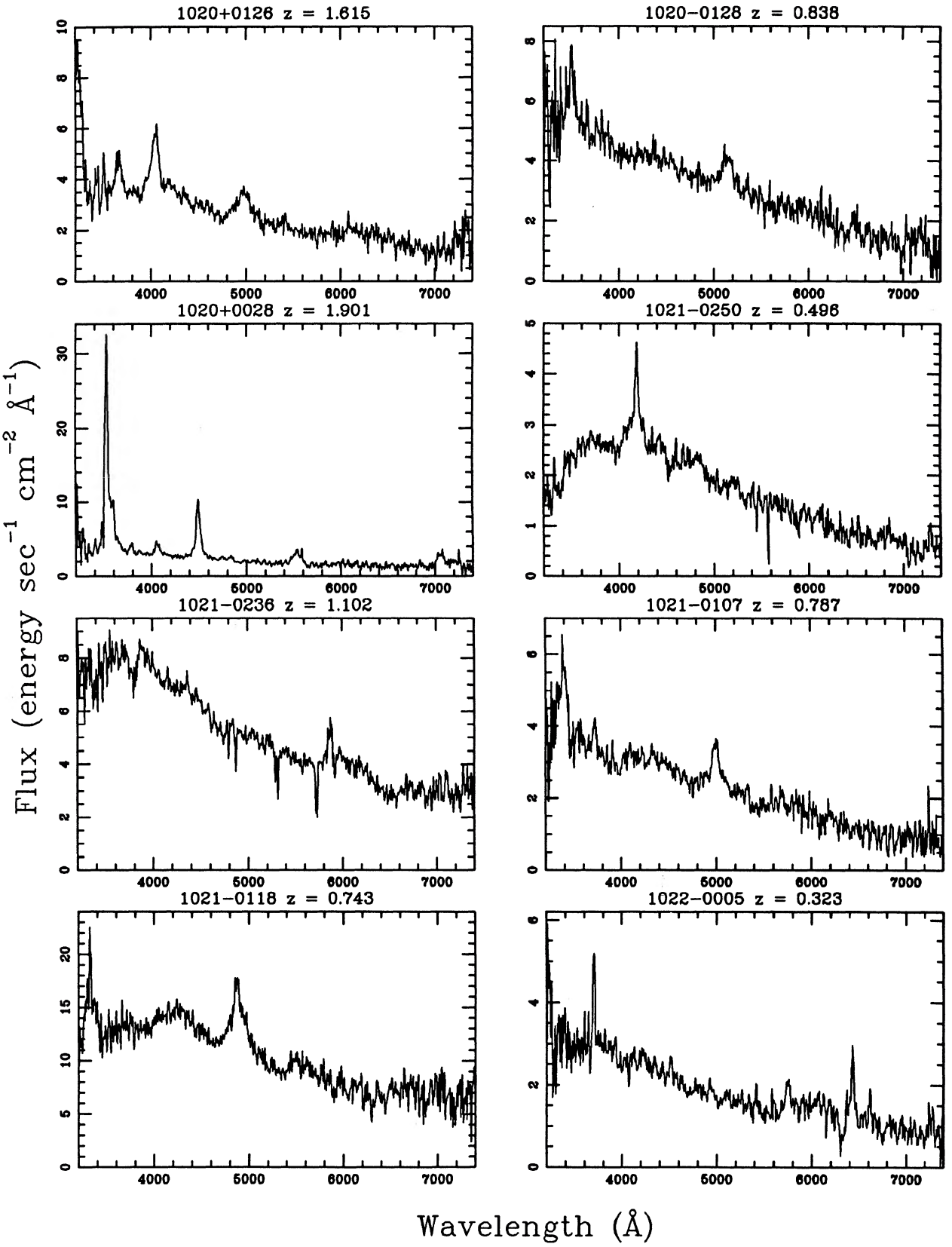

FIG. 1. (continued)

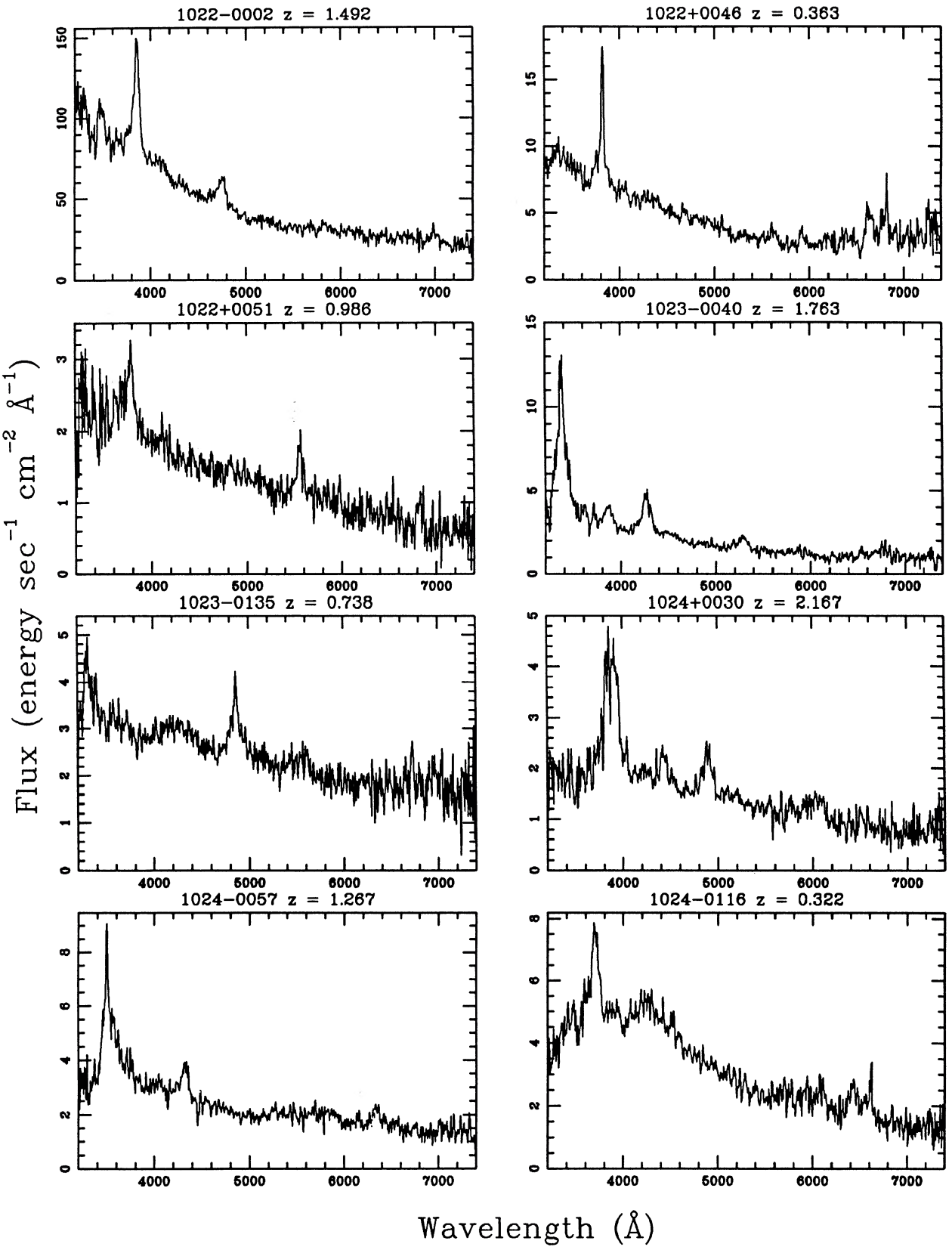

FIG. 1. (continued)

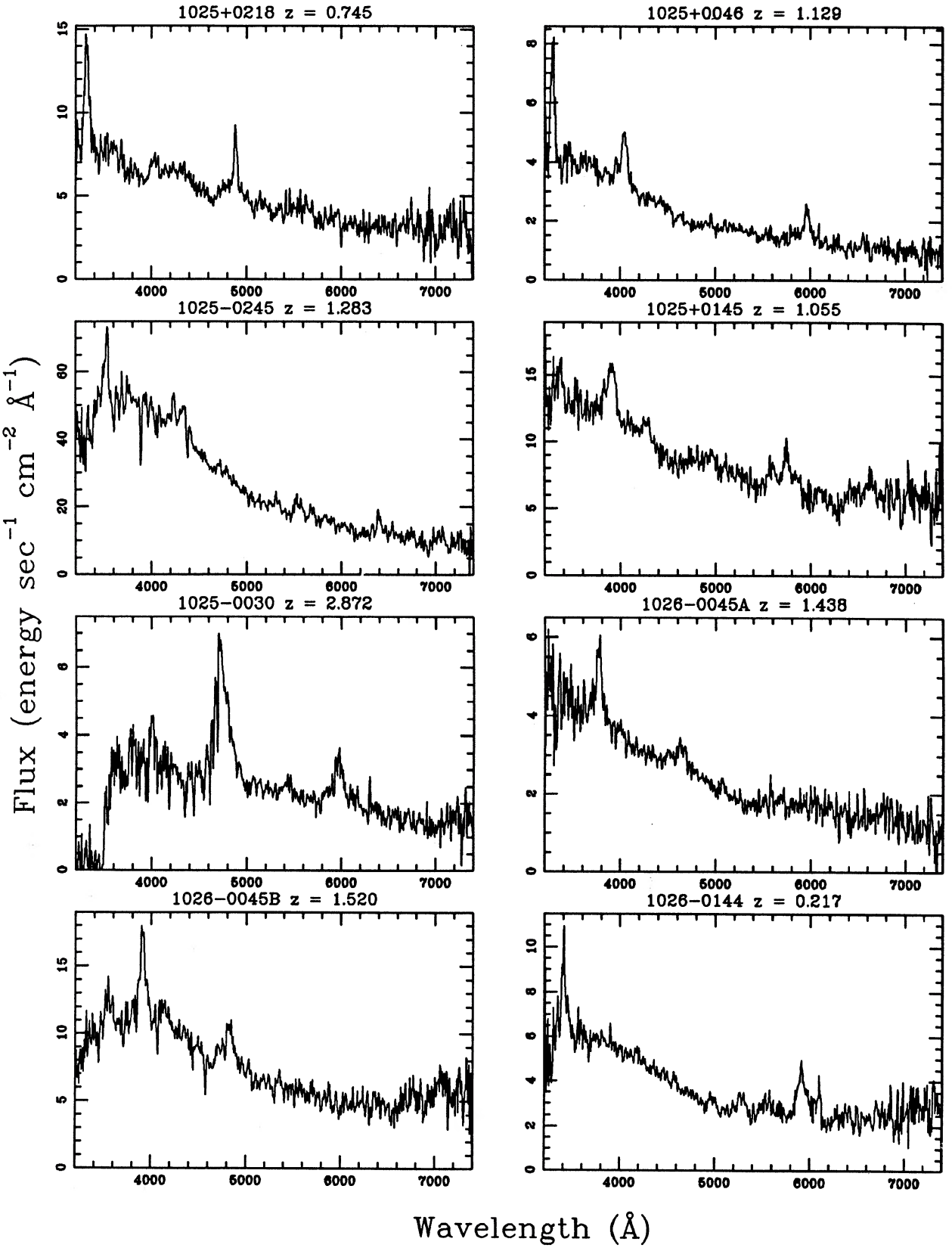

FIG. 1. (continued)

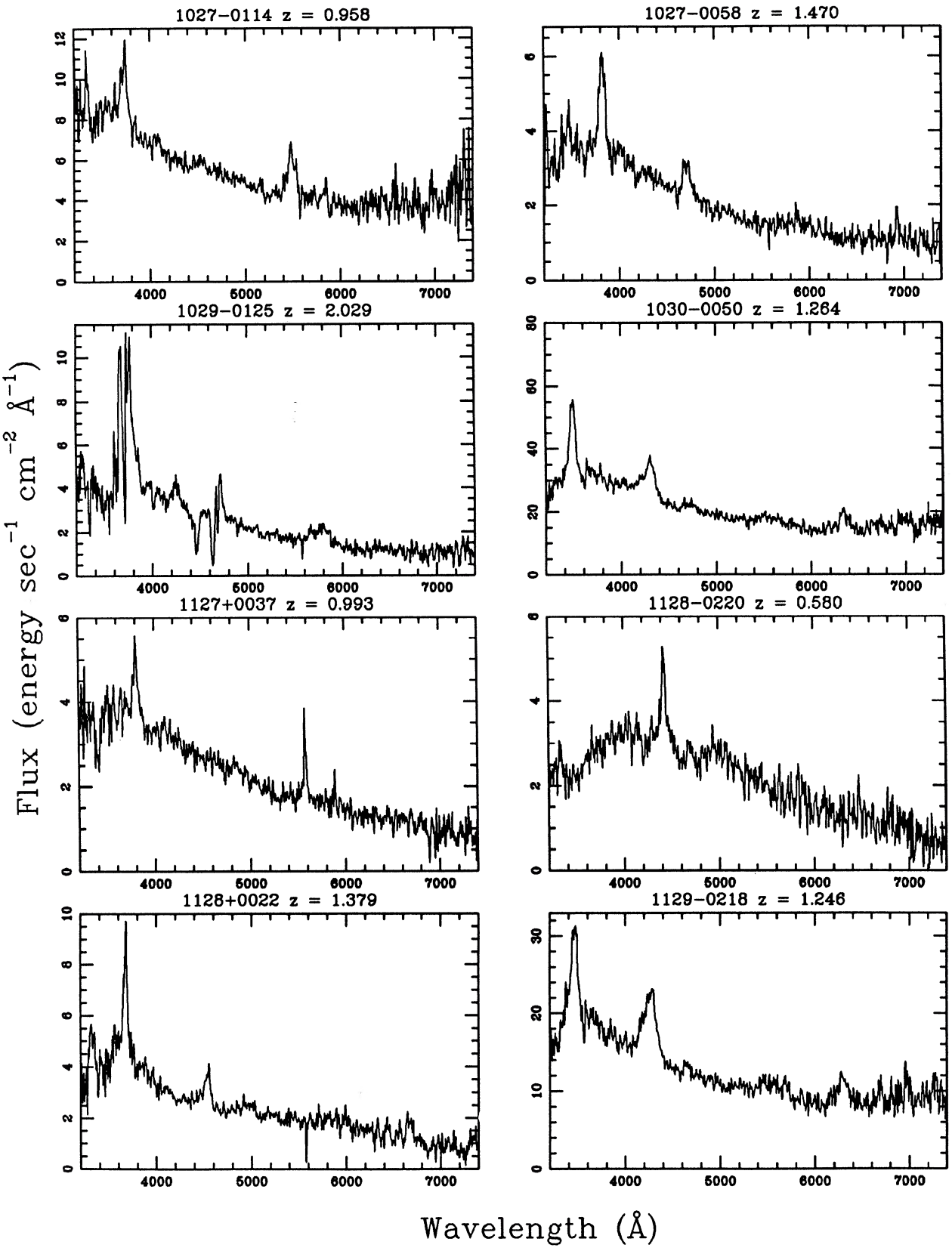

FIG. 1. (continued)

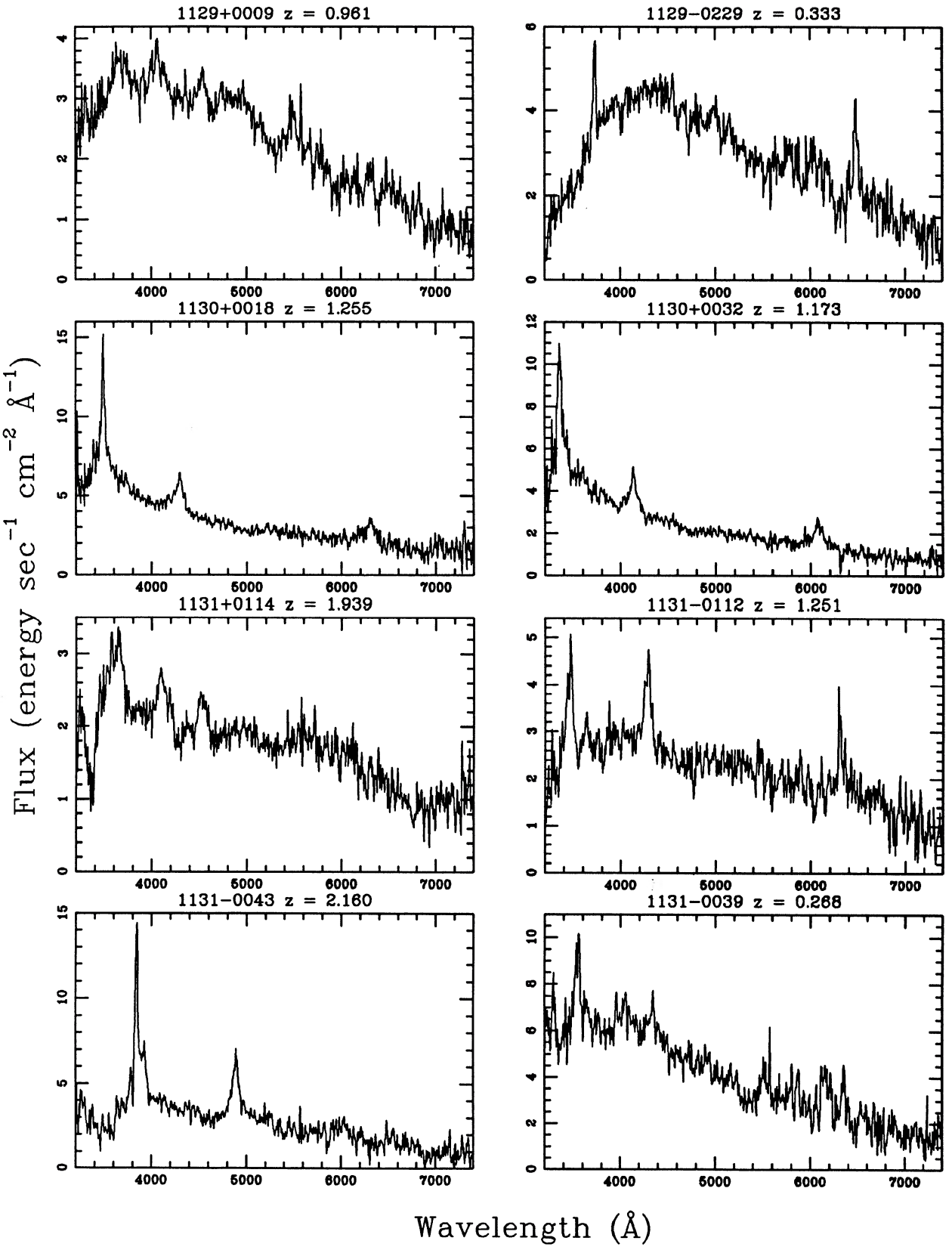

FIG. 1. (continued)

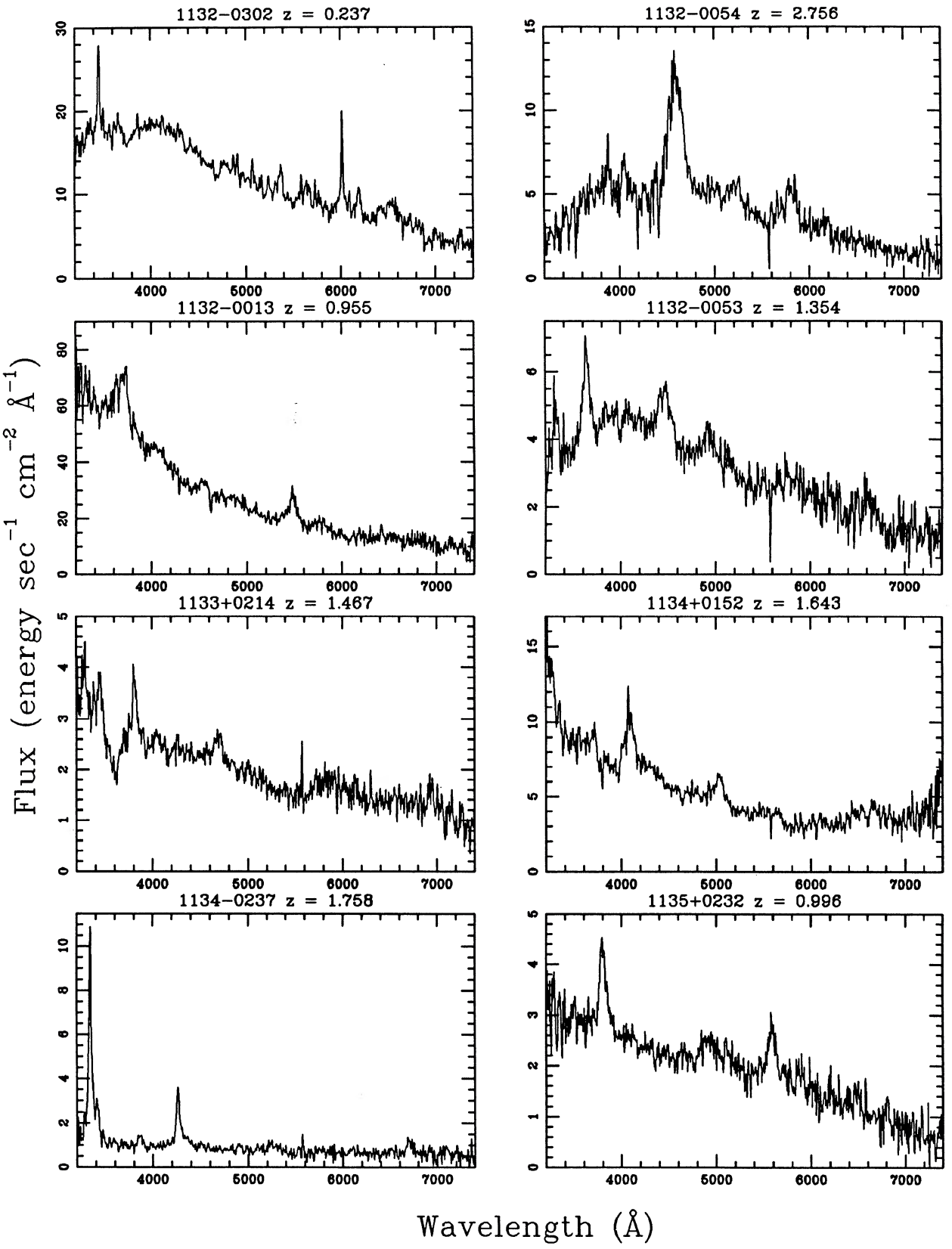

FIG. 1. (continued)

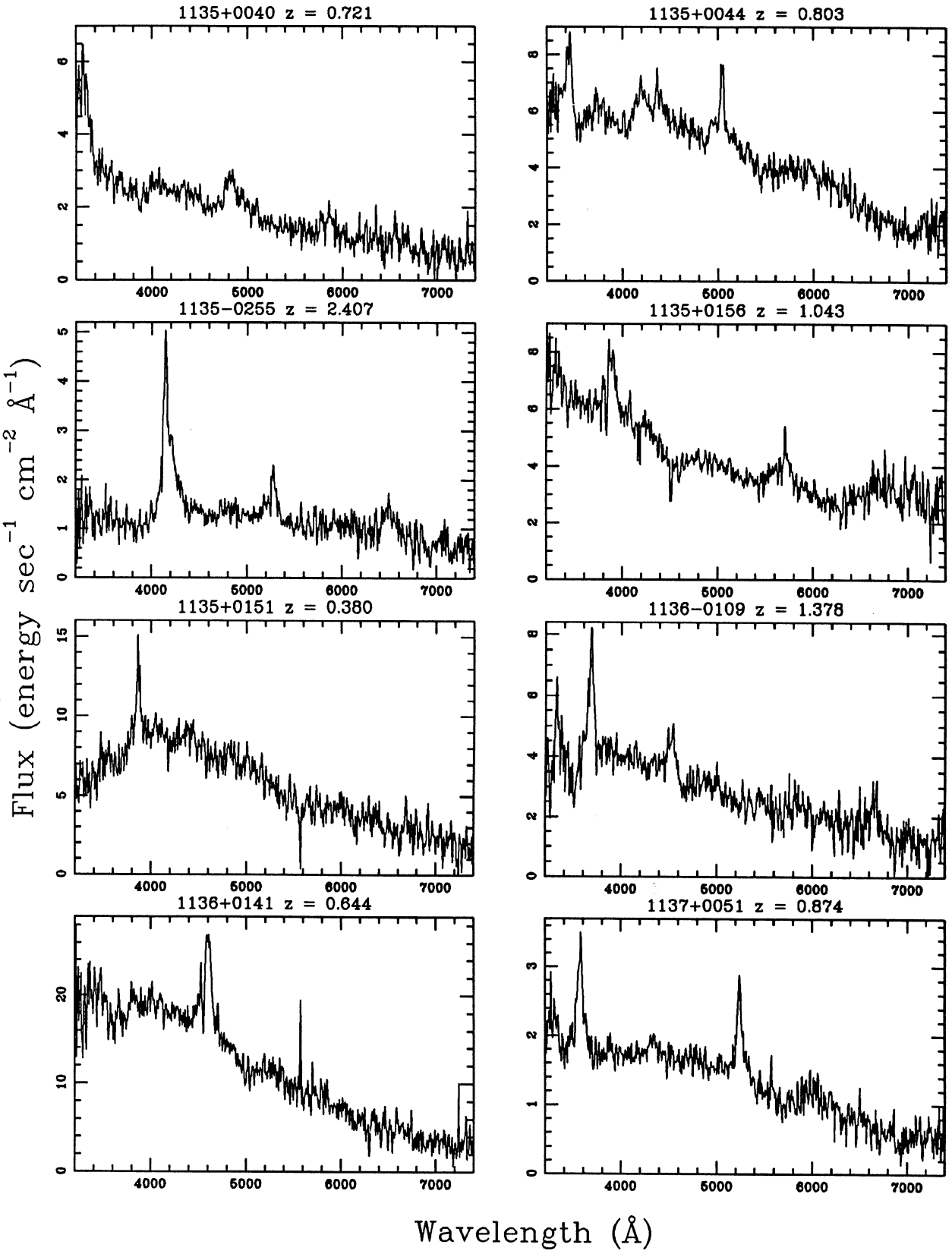

FIG. 1. (continued)

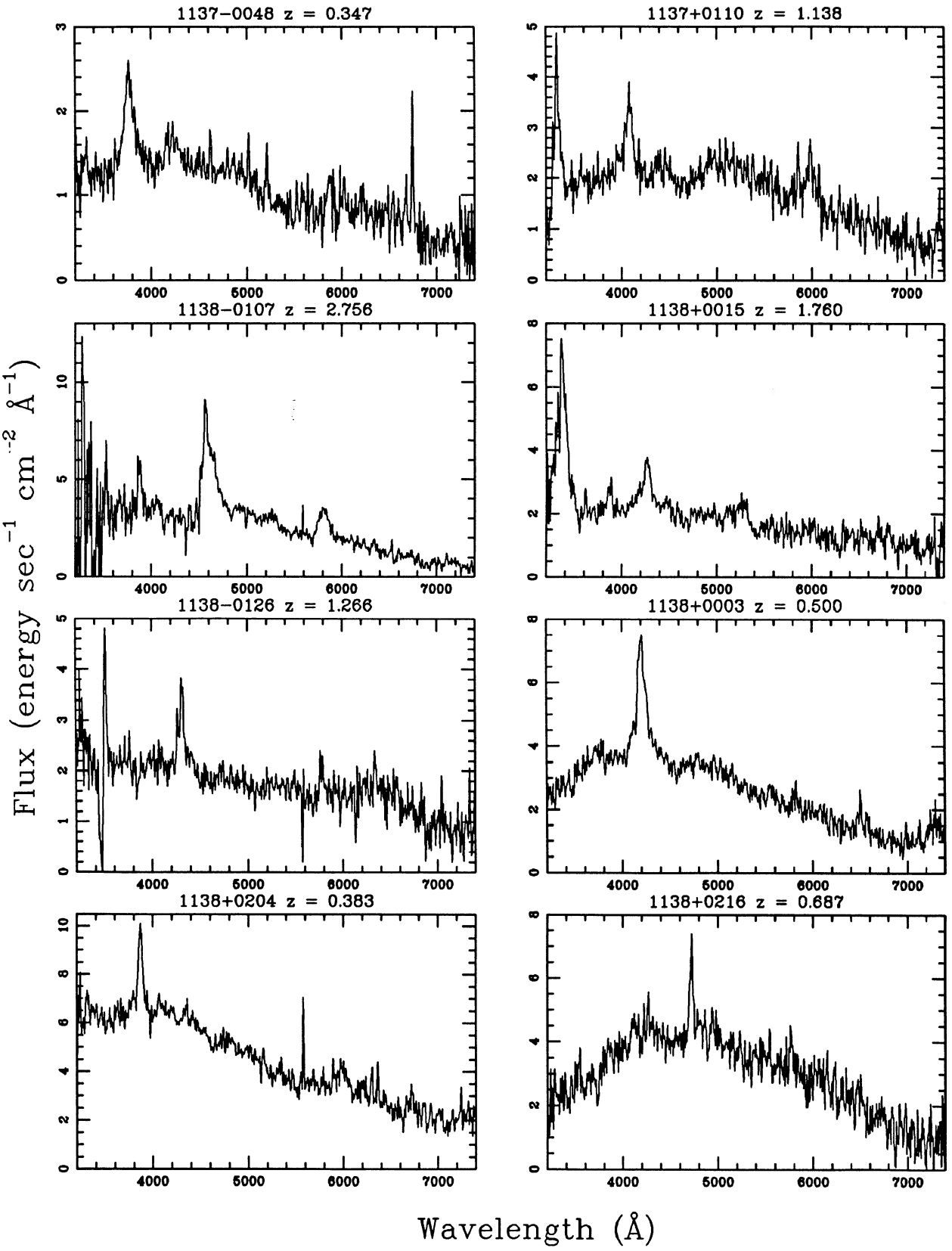

FIG. 1. (continued)

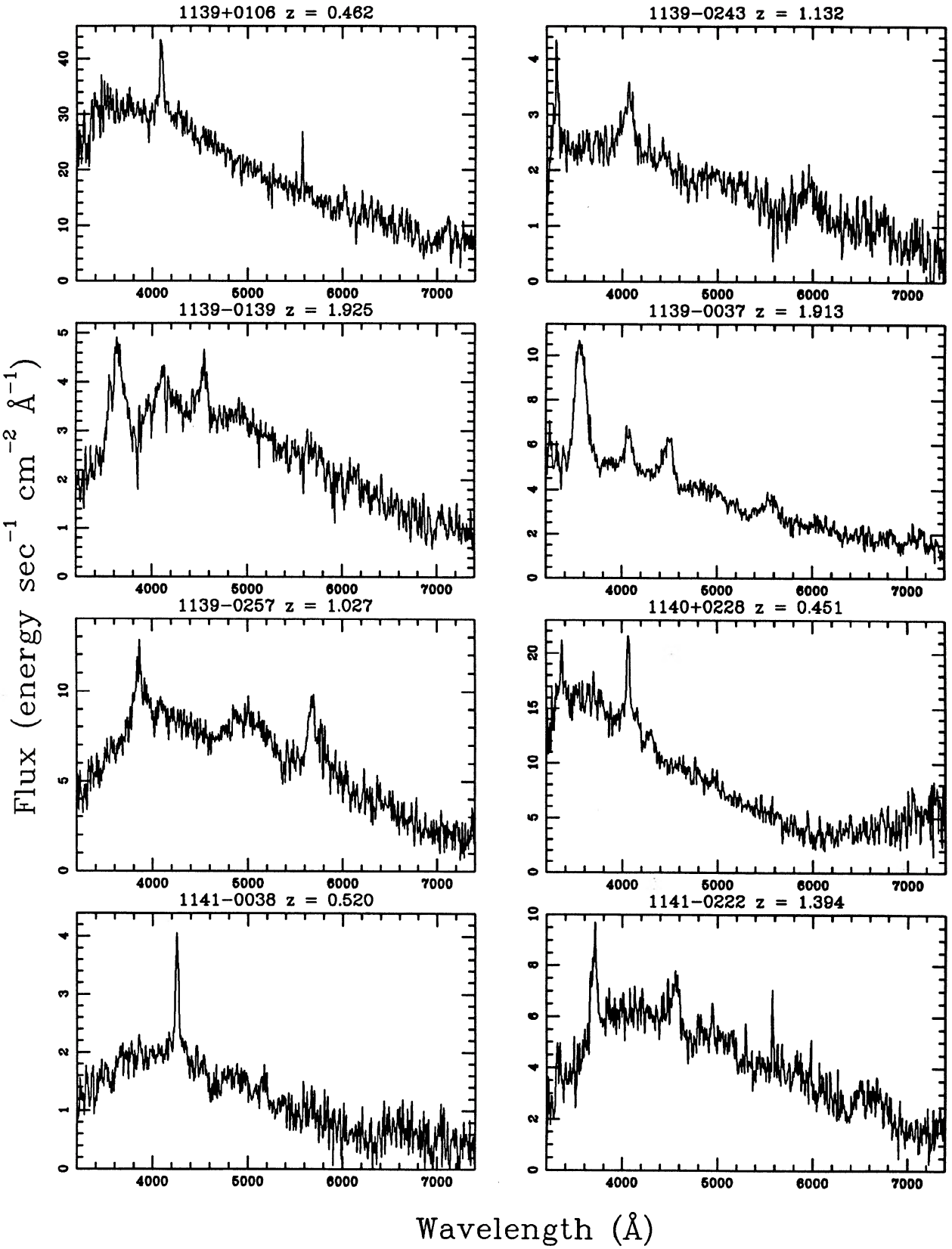

FIG. 1. (continued)

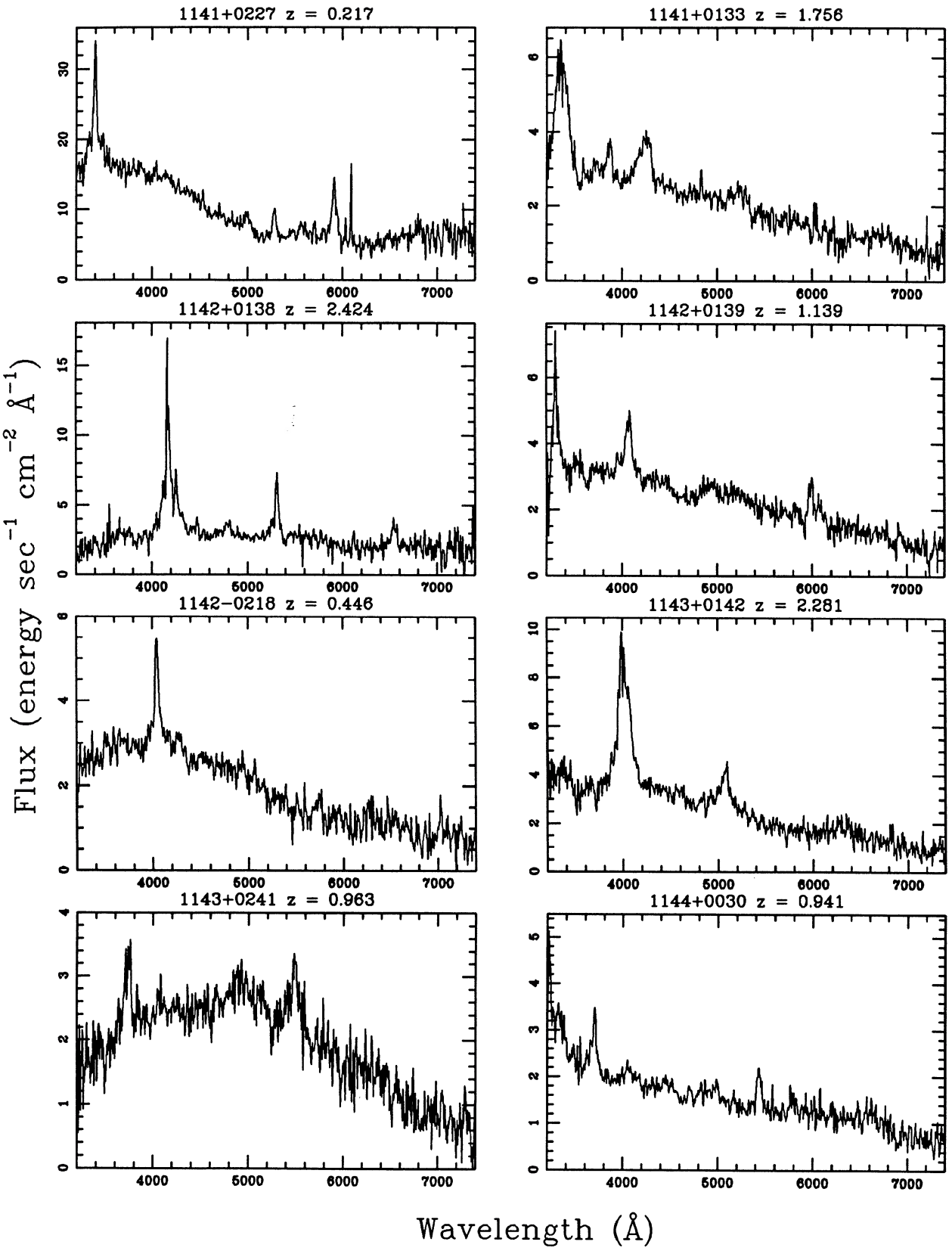

FIG. 1. (continued)

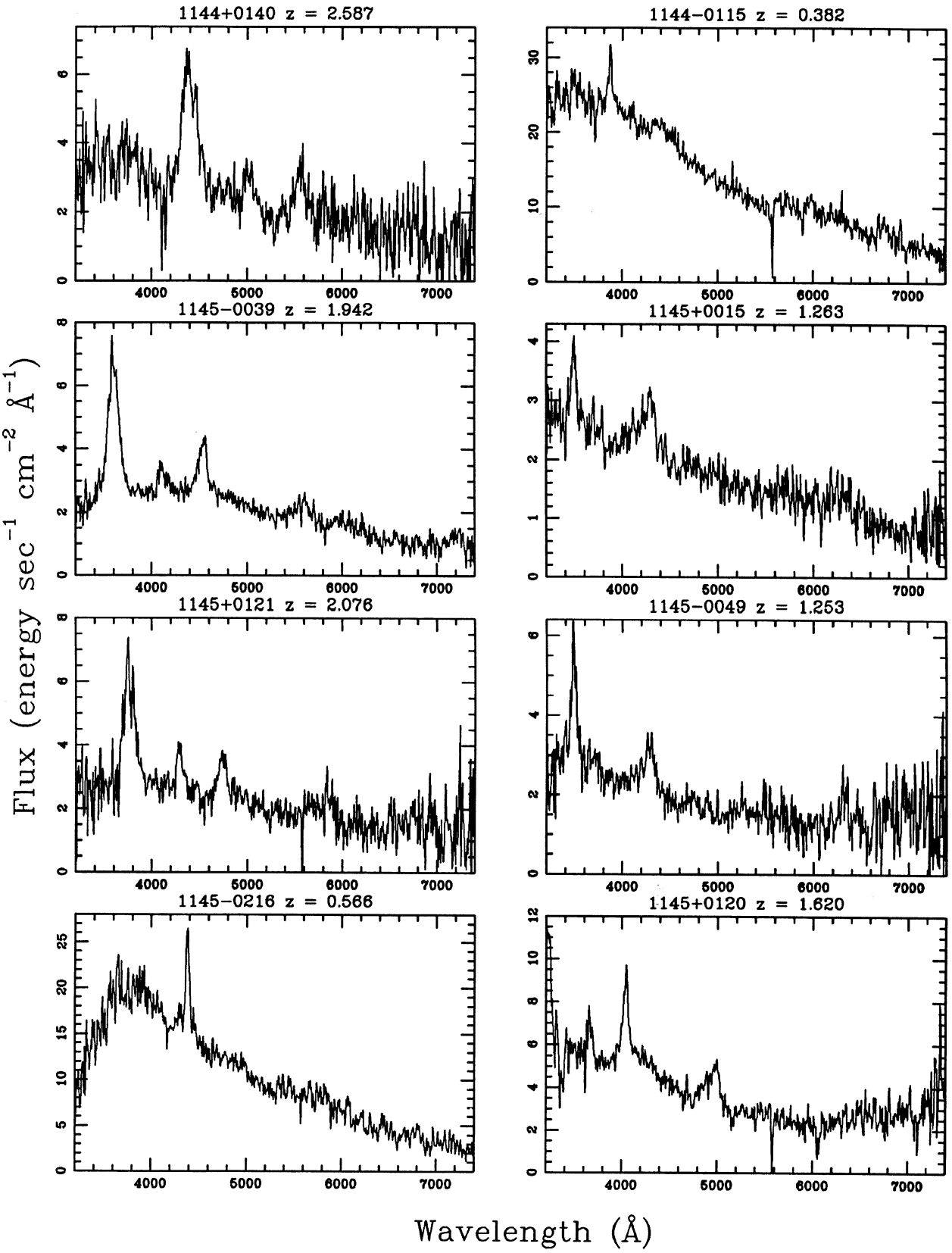

FIG. 1. (continued)

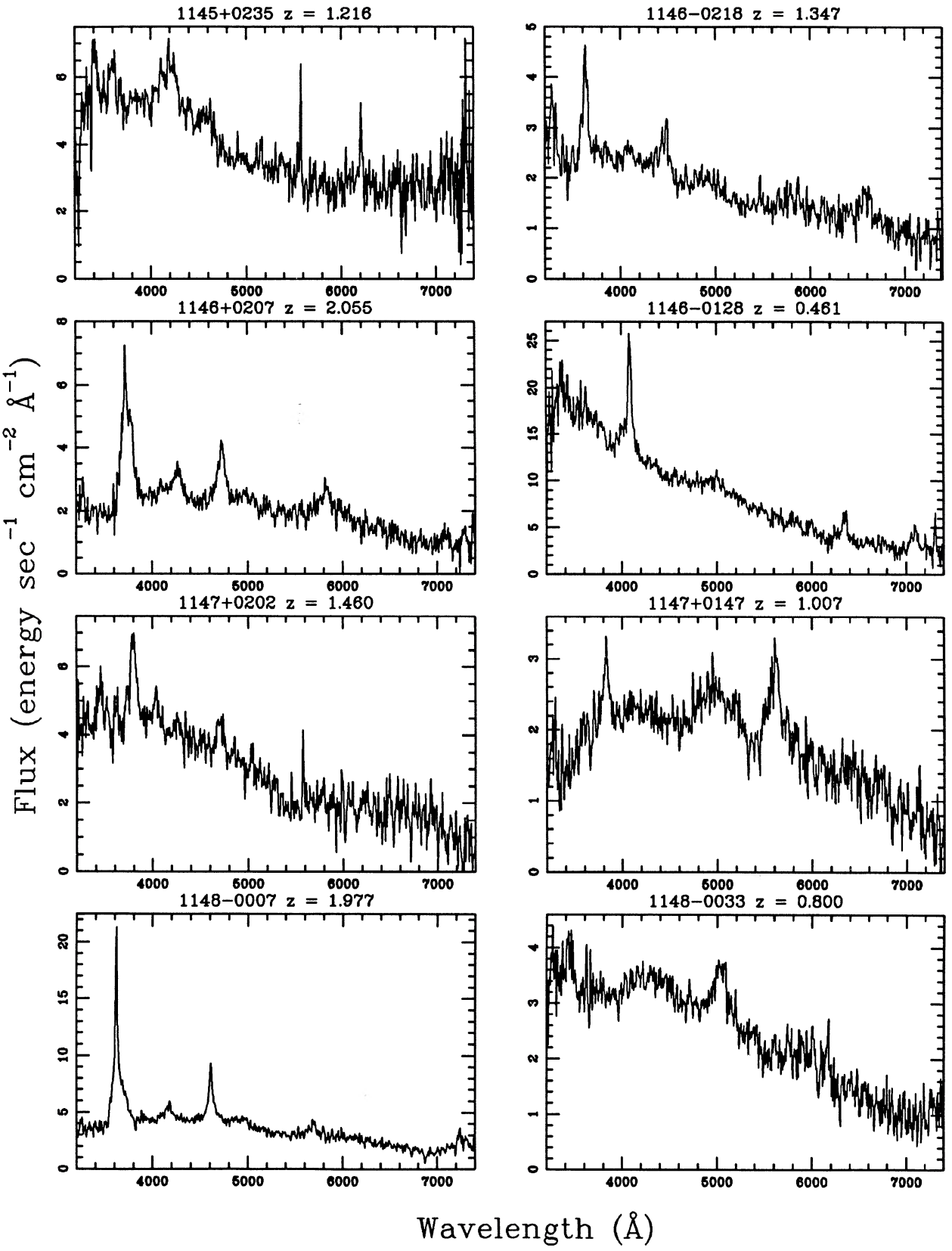

FIG. 1. (continued)

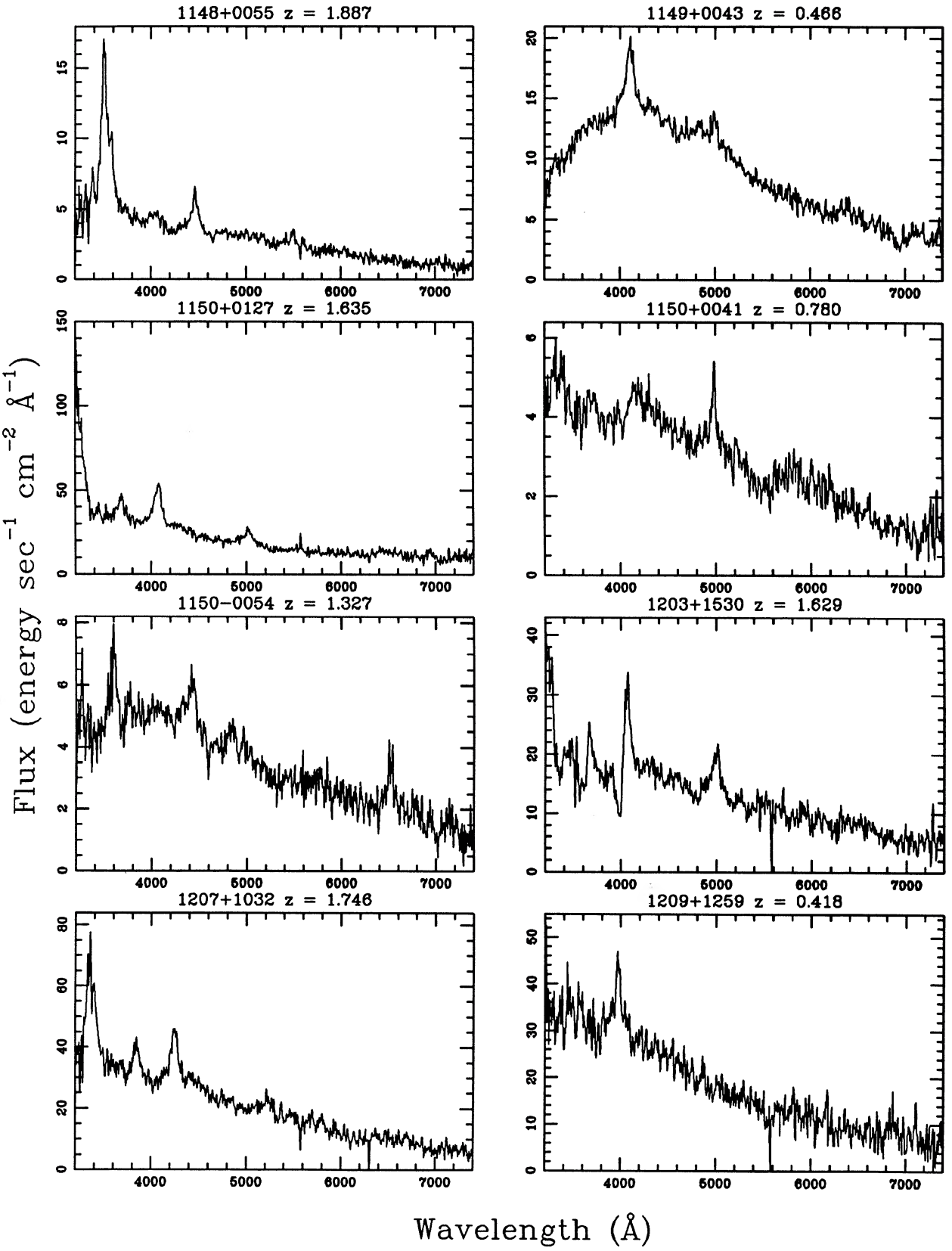

FIG. 1. (continued)

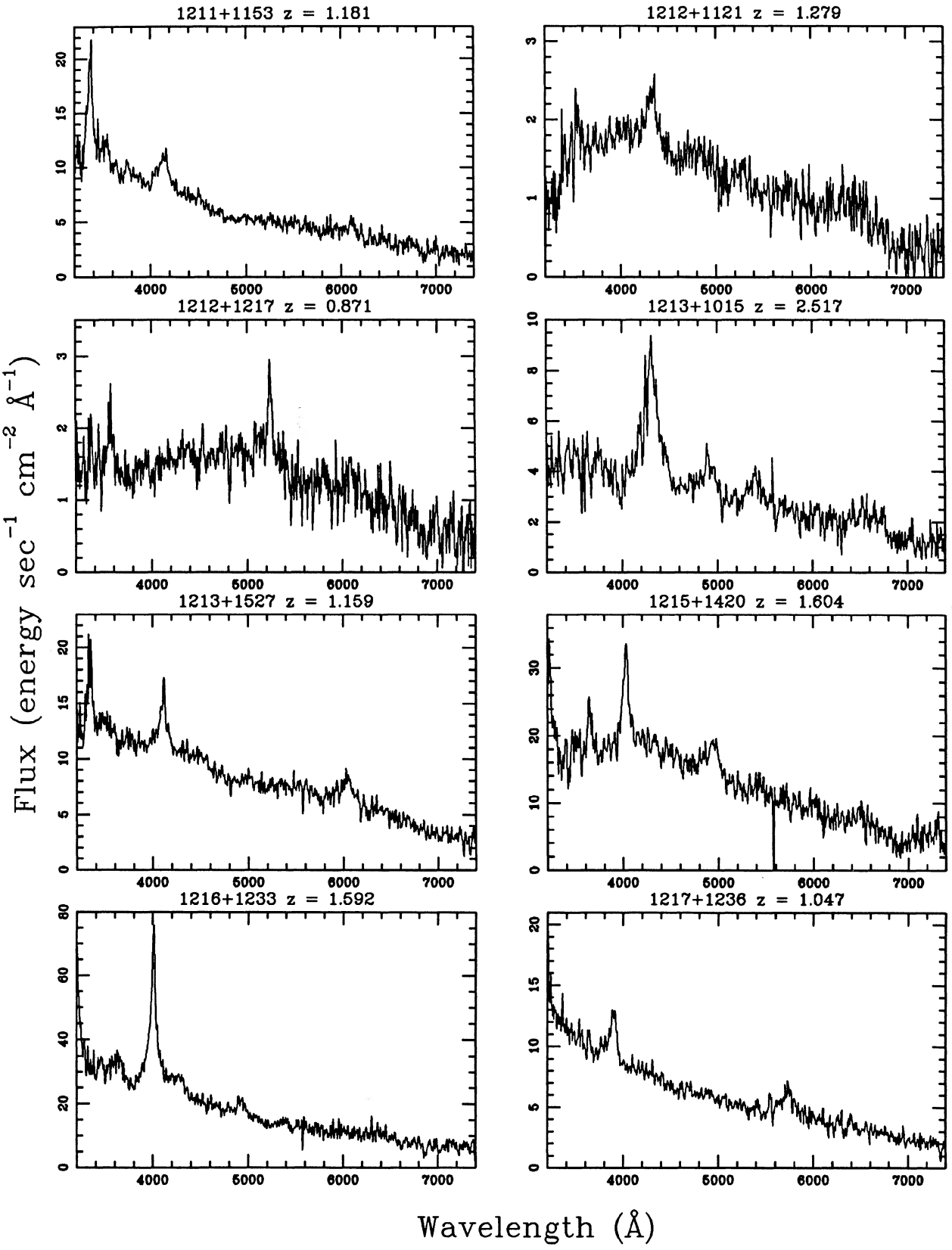

FIG. 1. (continued)

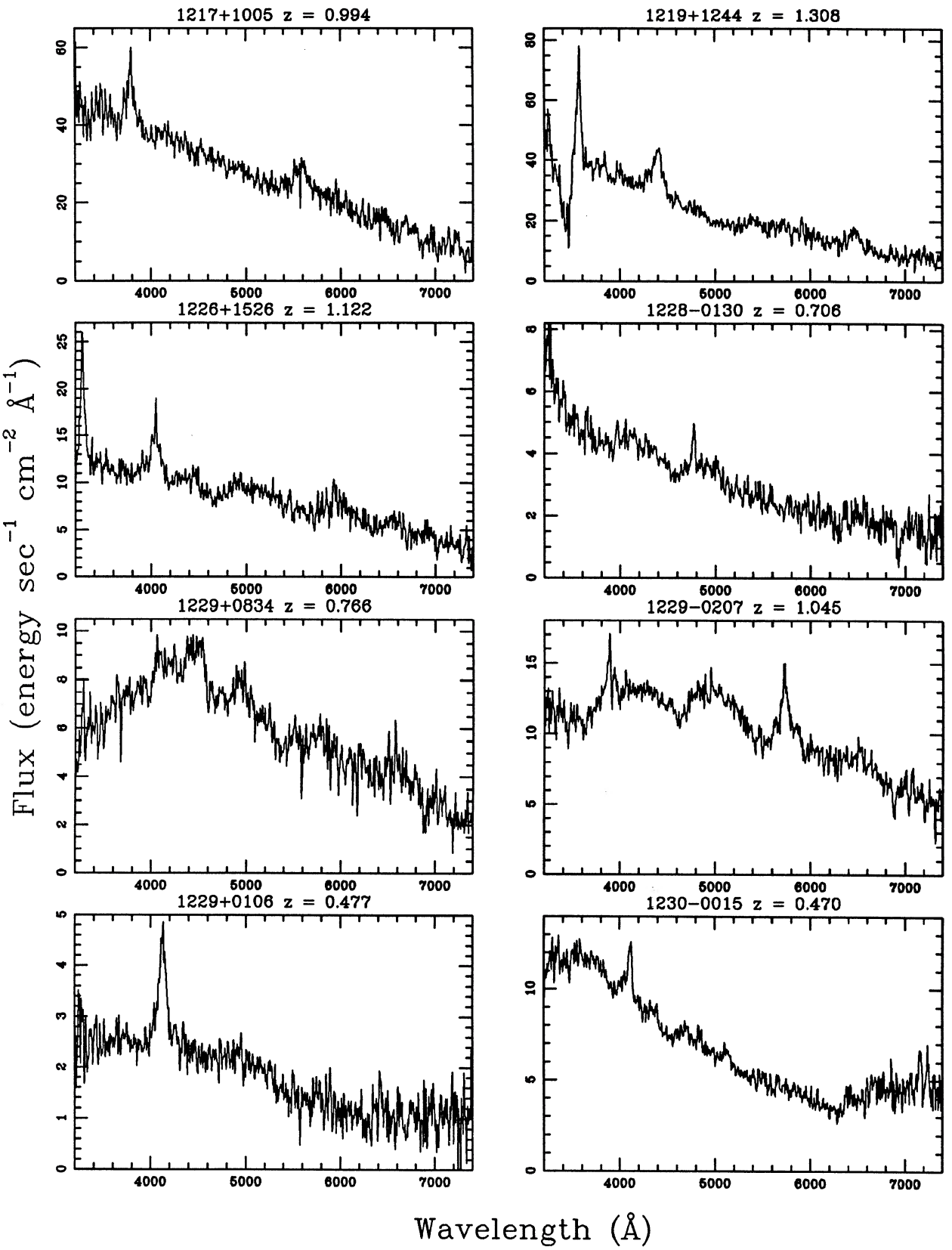

FIG. 1. (continued)

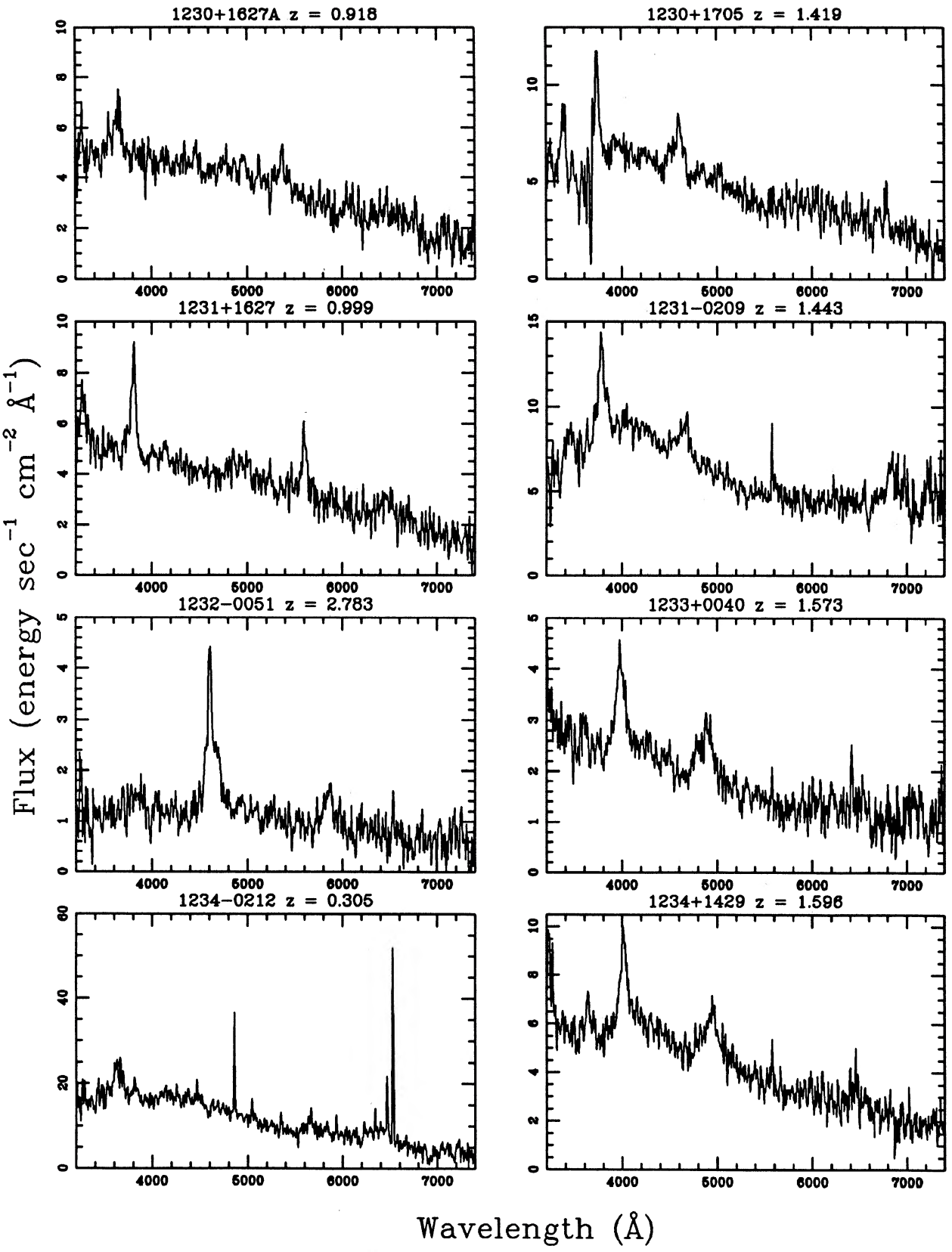

FIG. 1. (continued)

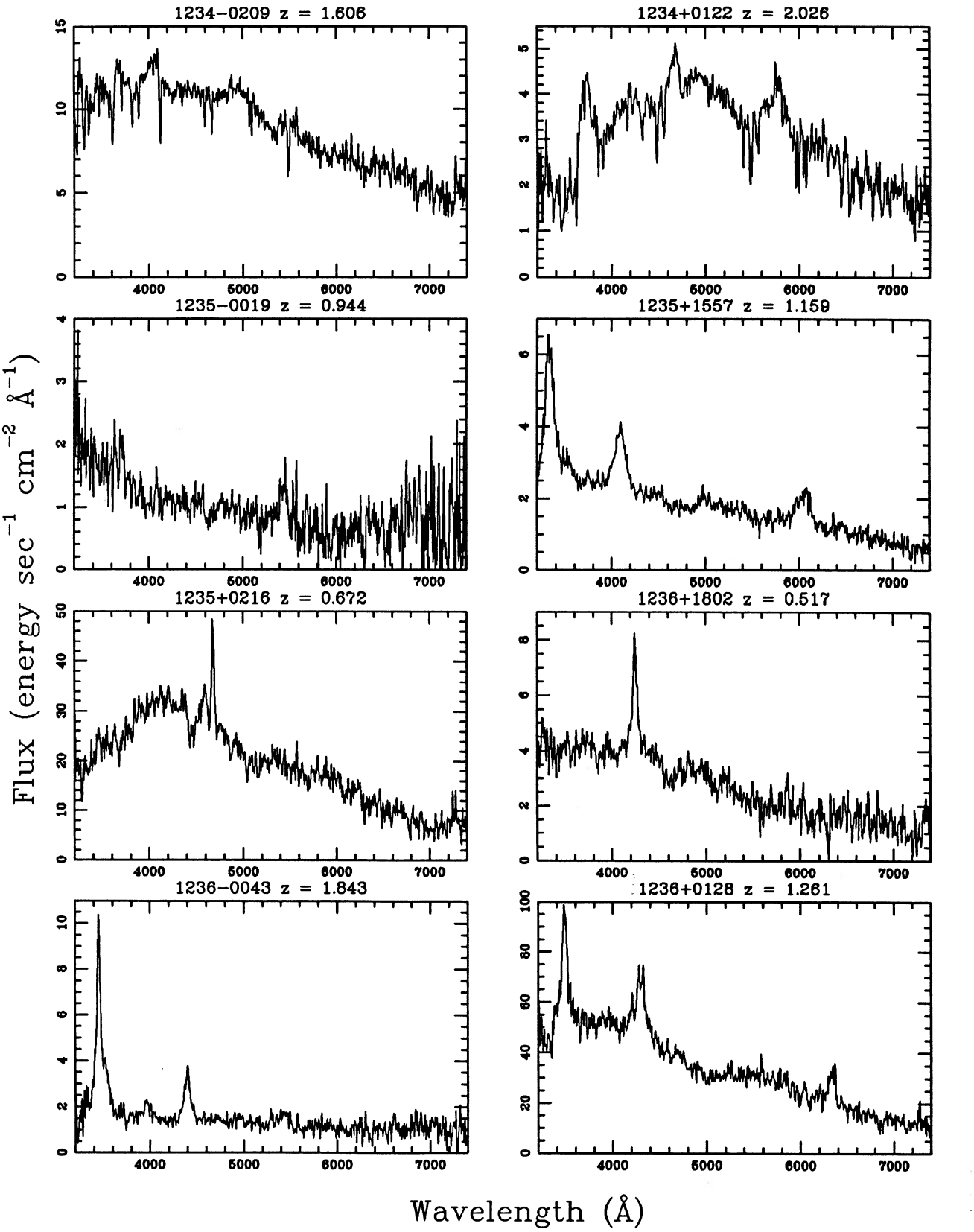

FIG. 1. (continued)

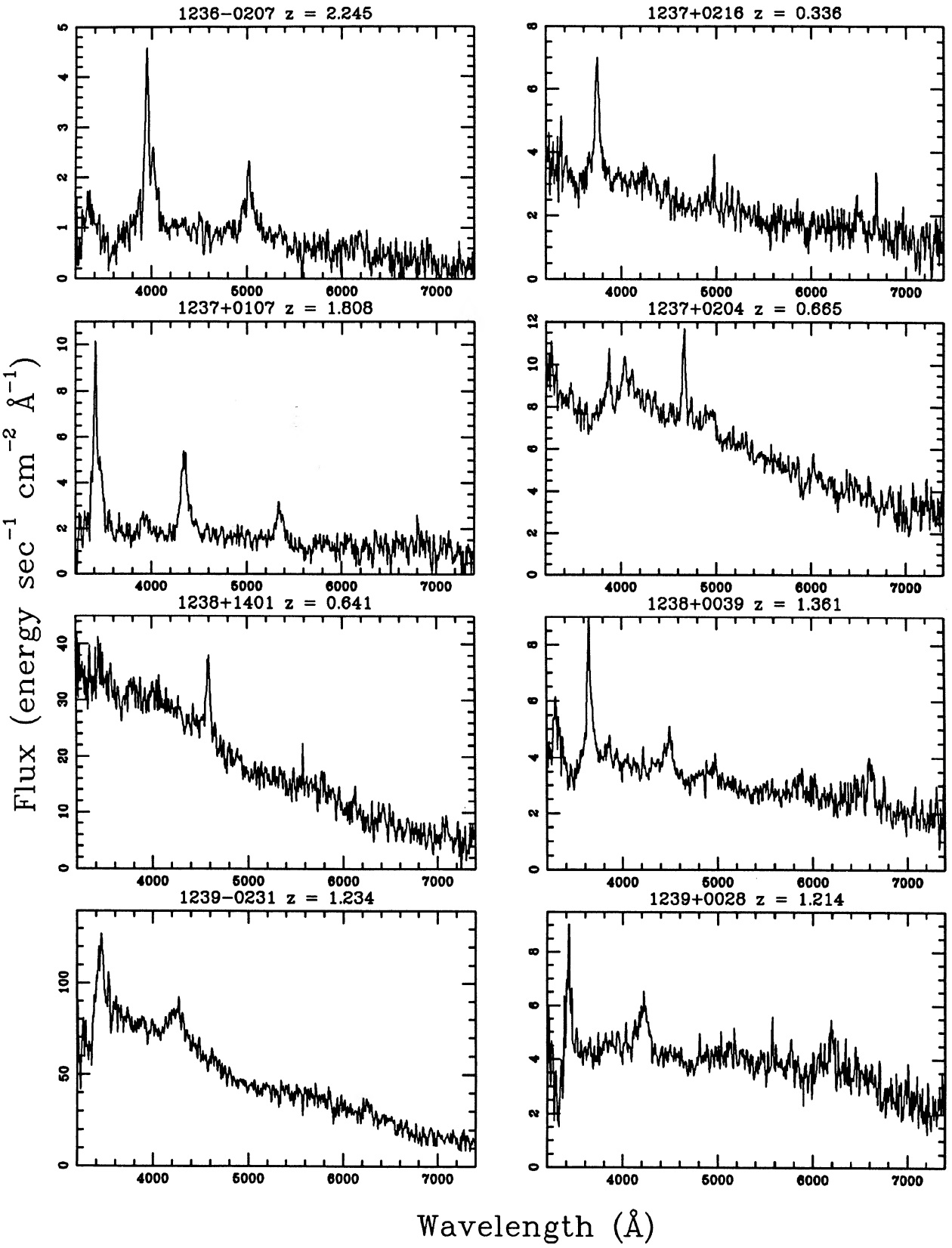

FIG. 1. (continued)

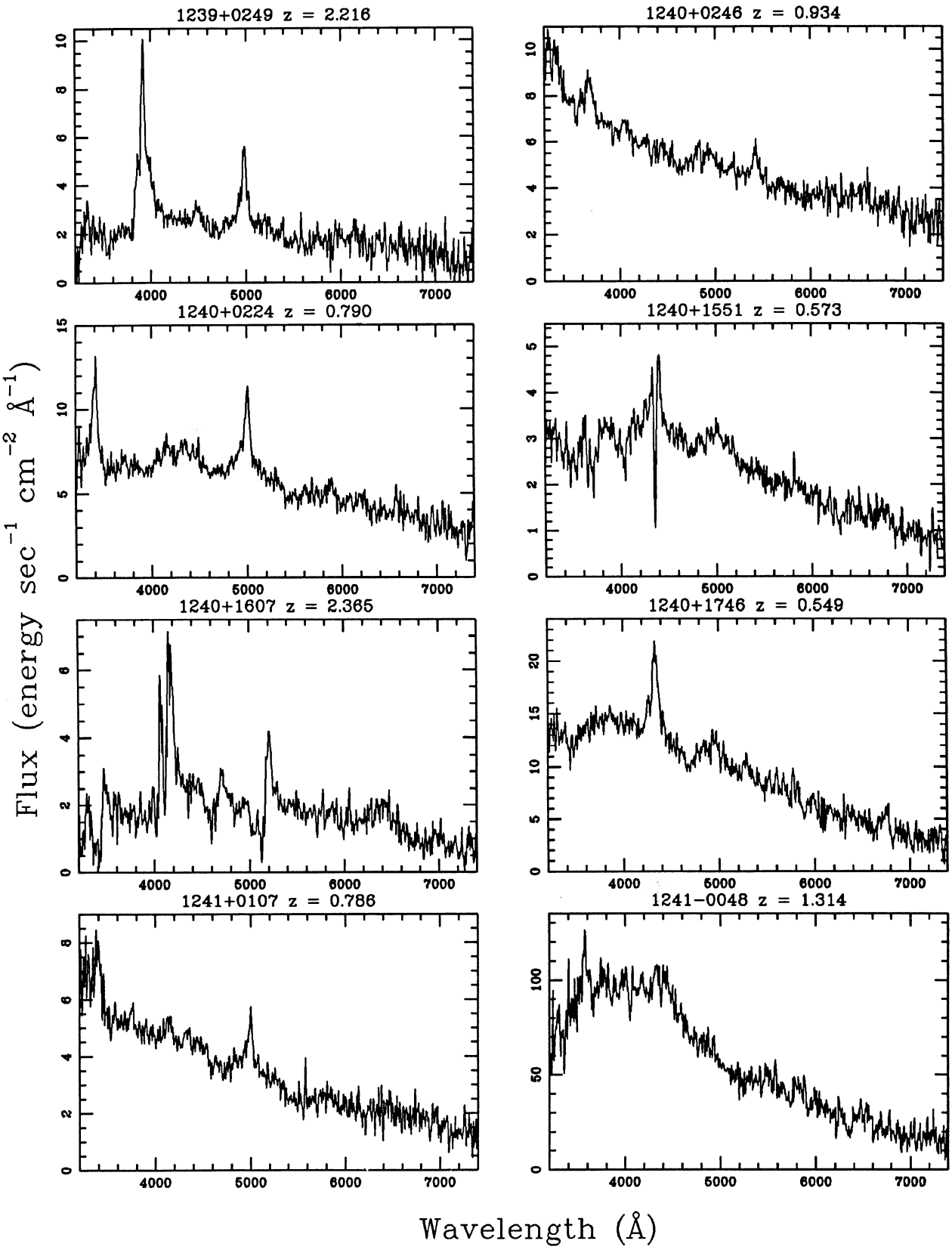

FIG. 1. (continued)

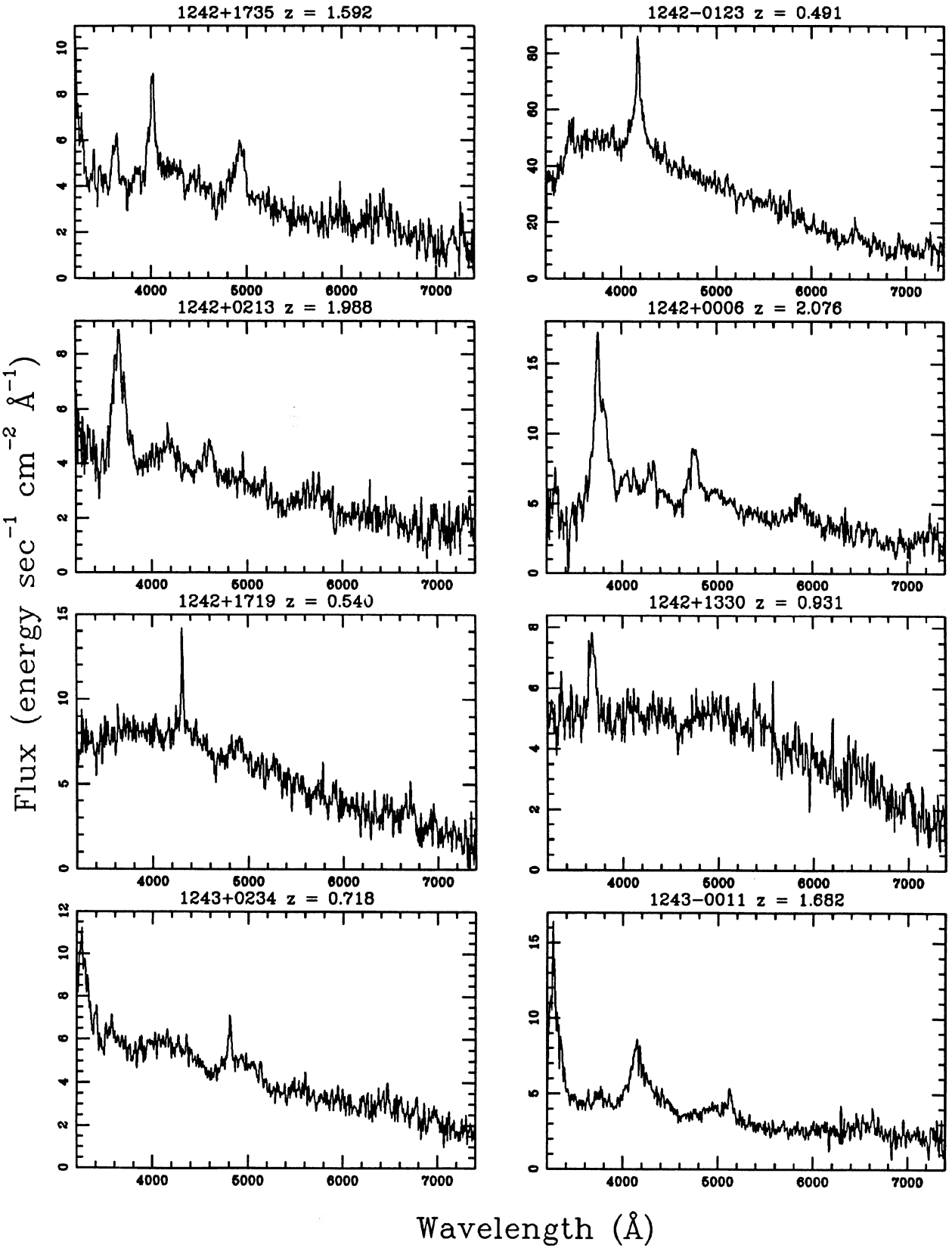

FIG. 1. (continued)

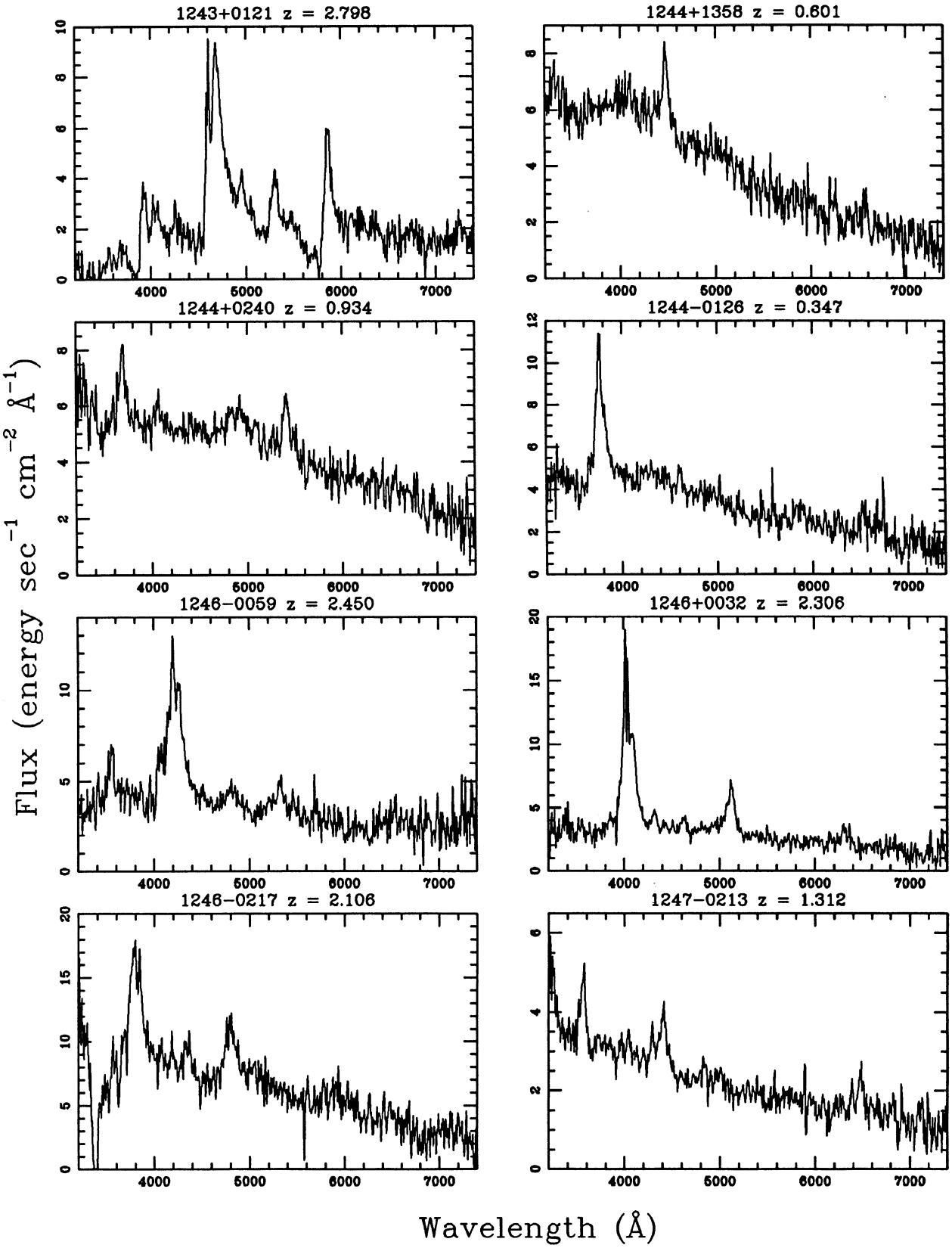

FIG. 1. (continued)

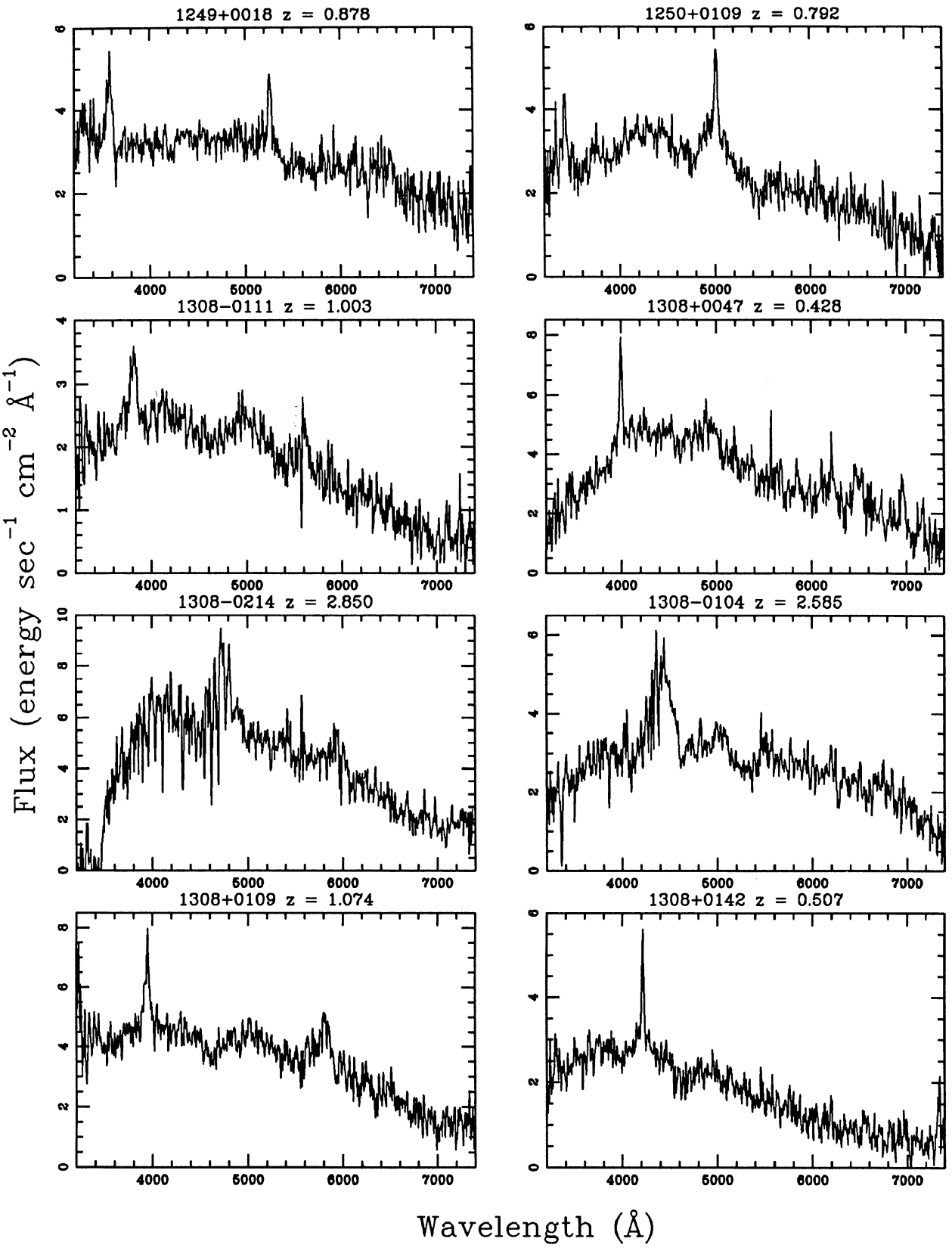

FIG. 1. (continued)

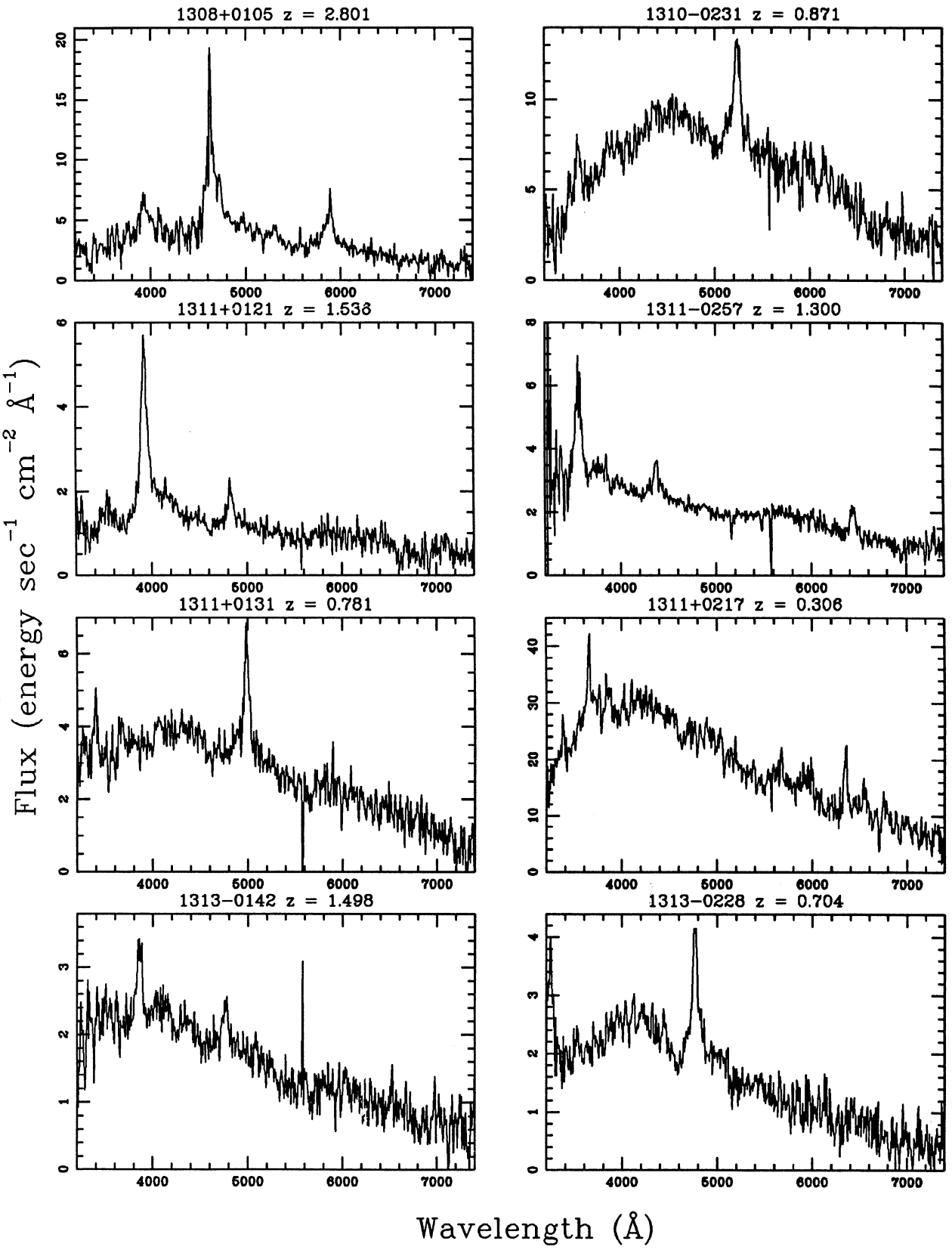

FIG. 1. (continued)

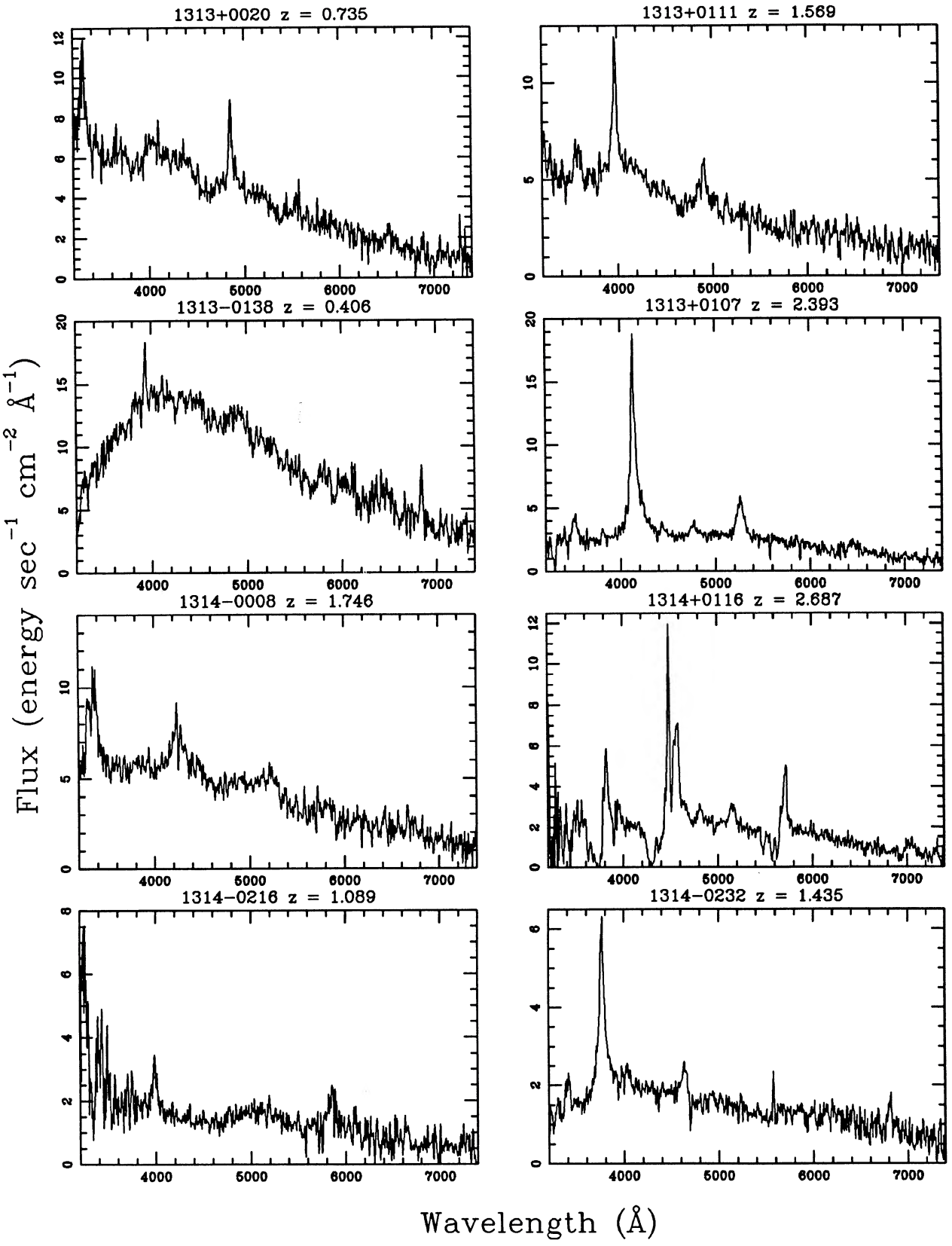

FIG. 1. (continued)

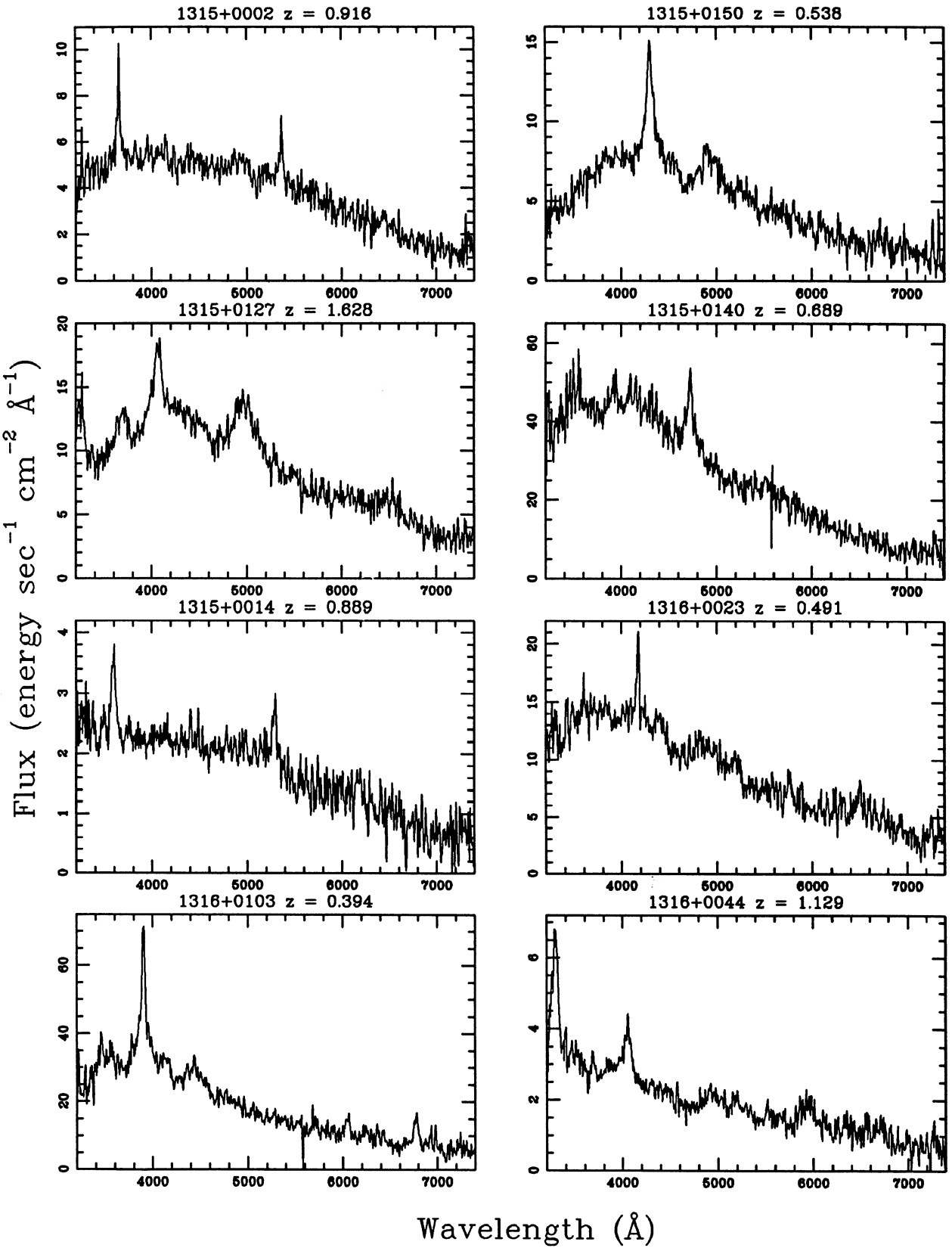

FIG. 1. (continued)

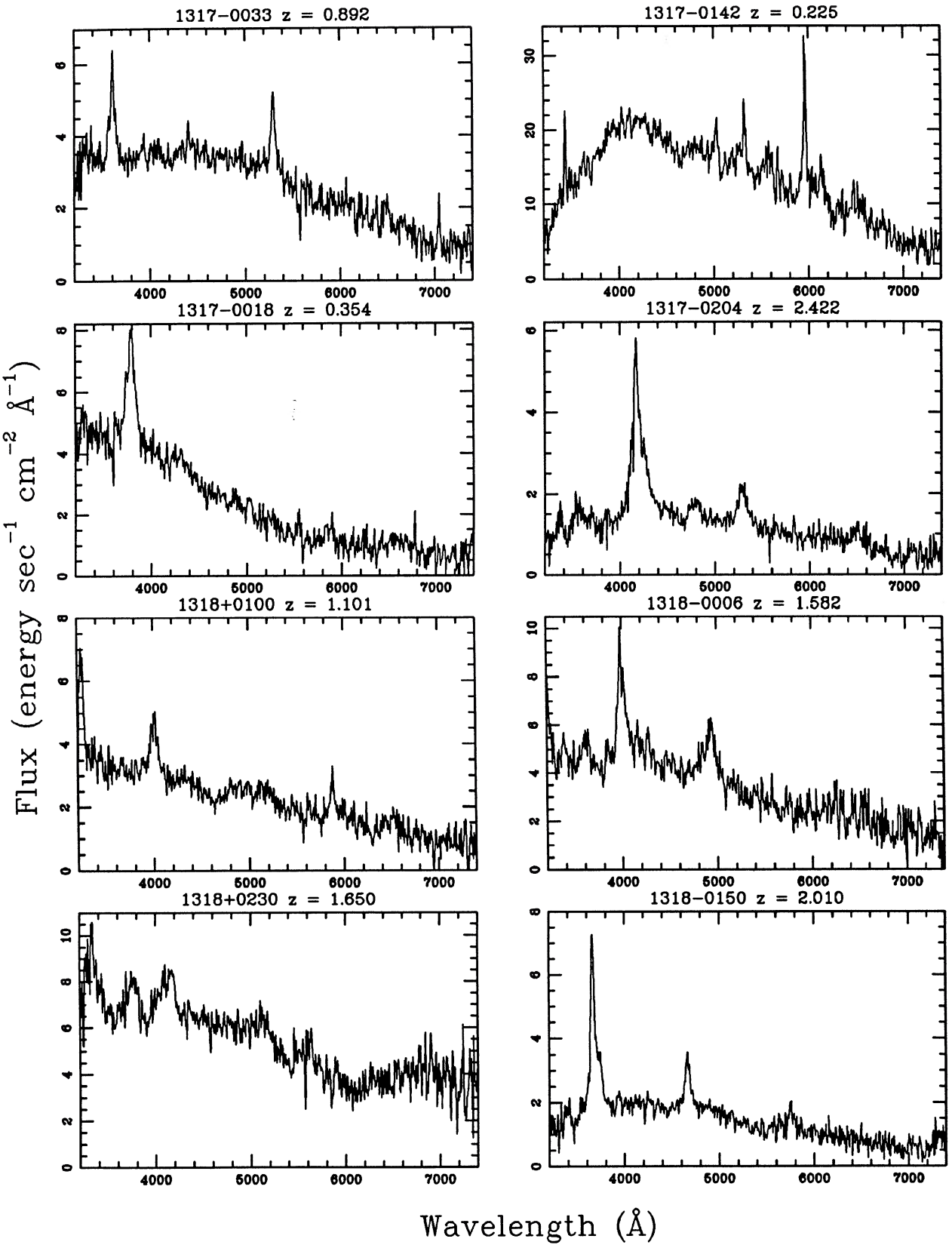

FIG. 1. (continued)

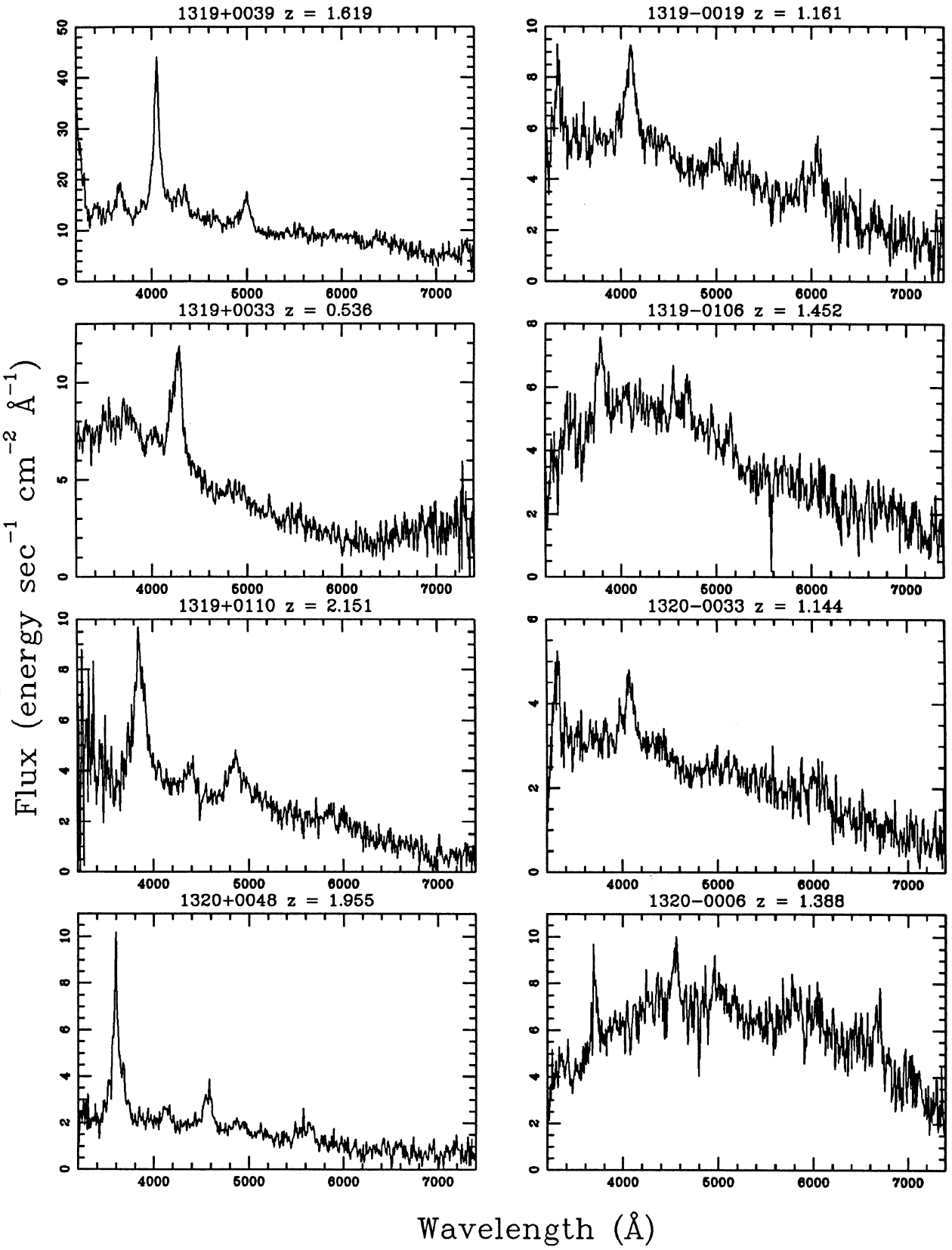

FIG. 1. (continued)

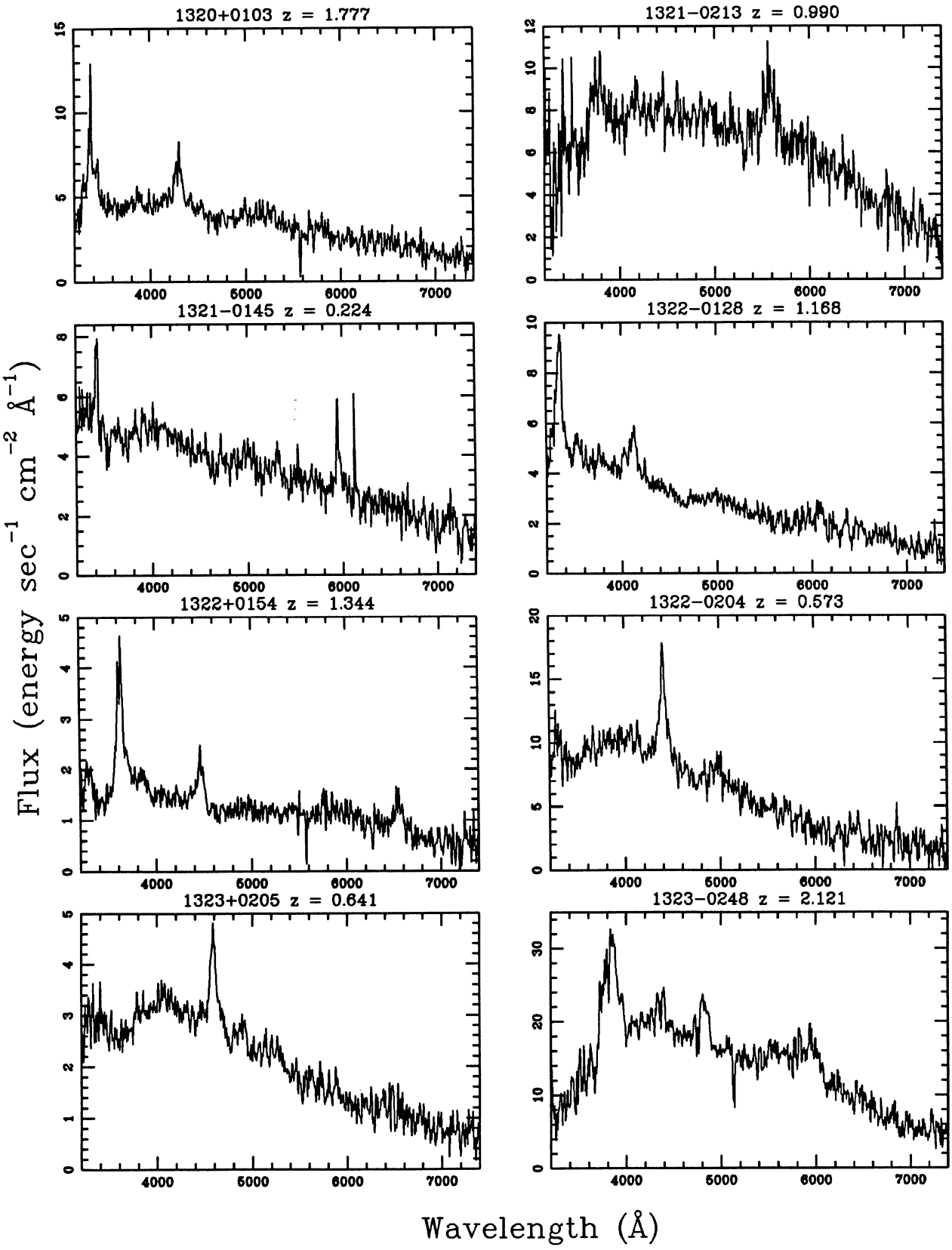

FIG. 1. (continued)

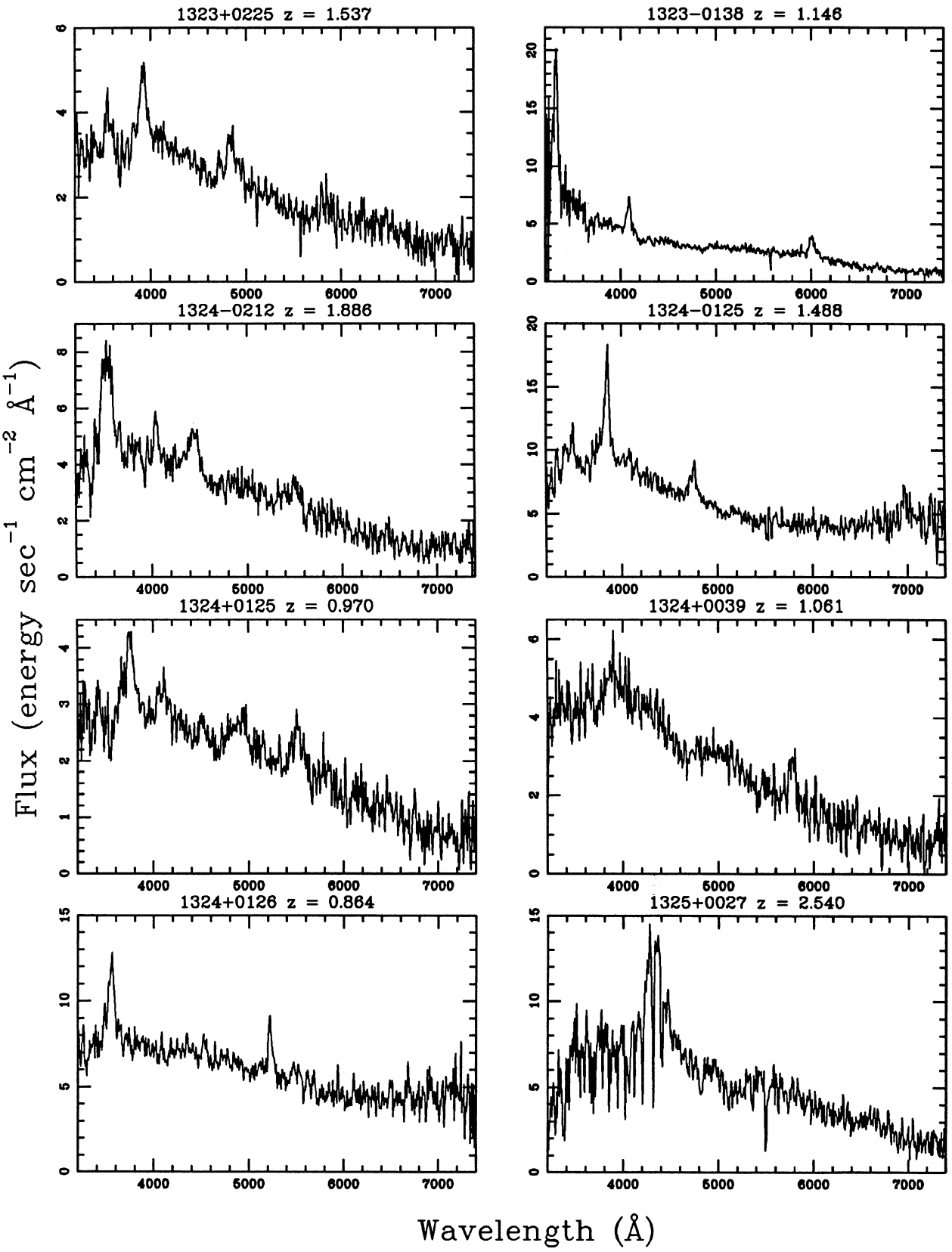

FIG. 1. (continued)

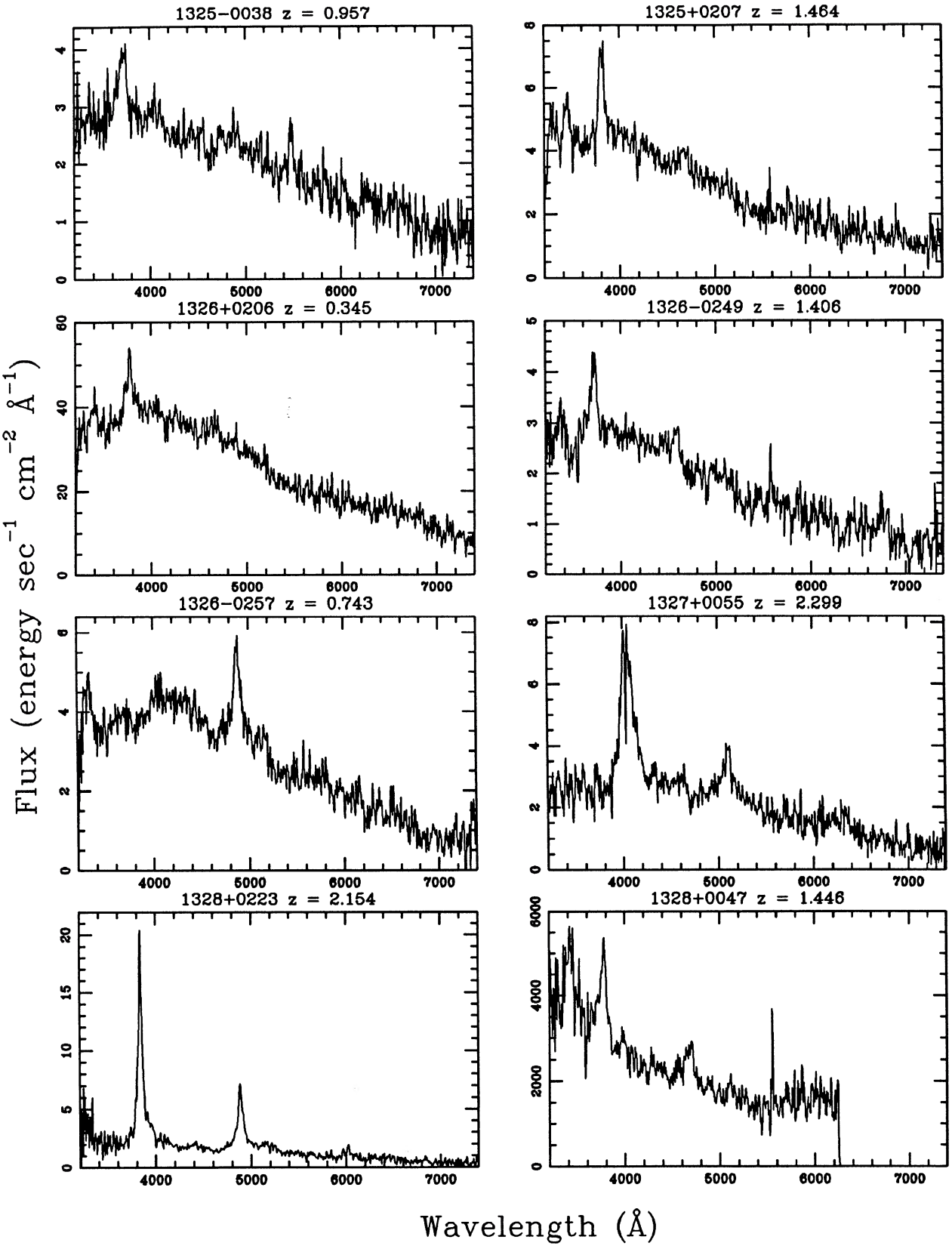

FIG. 1. (continued)

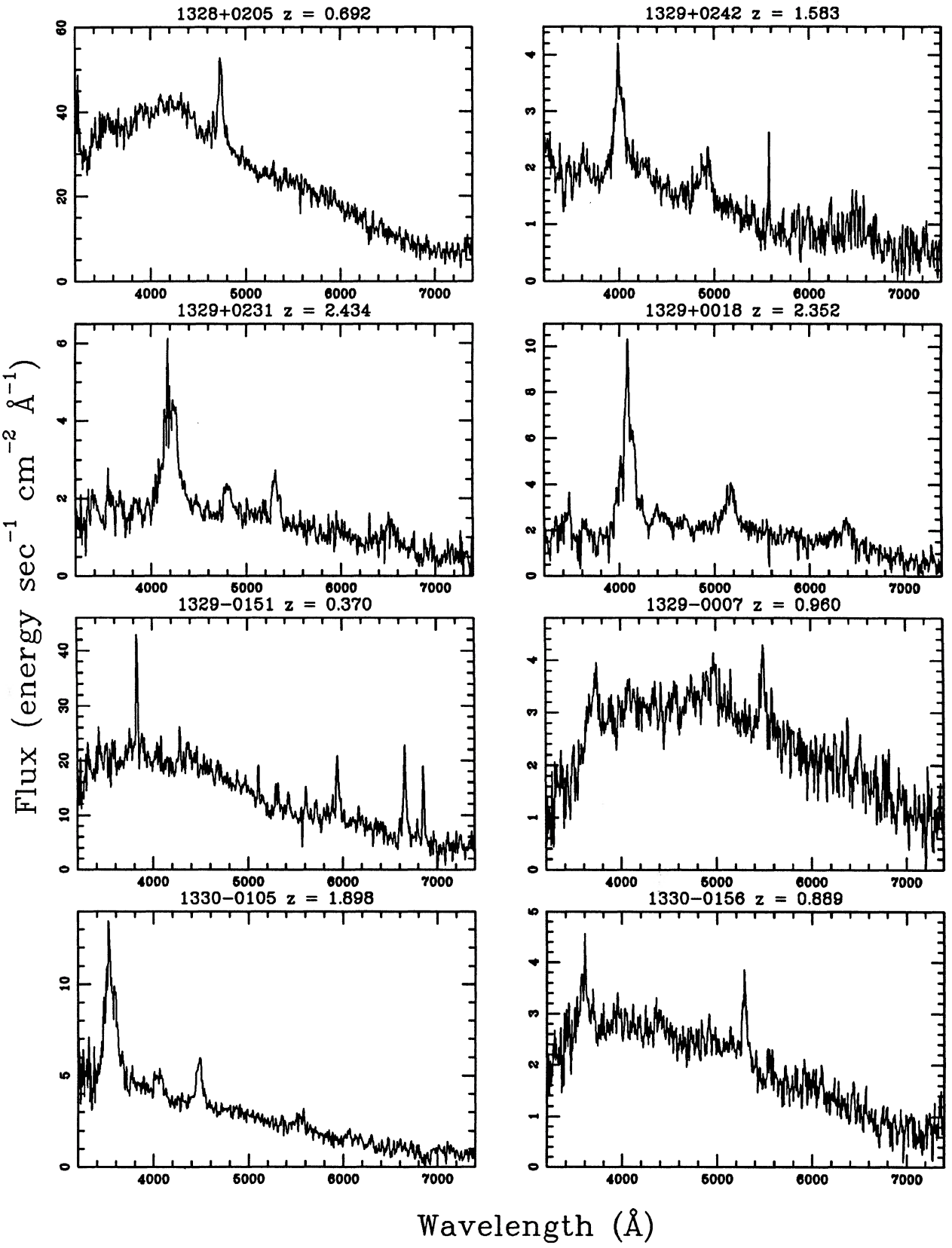

FIG. 1. (continued)

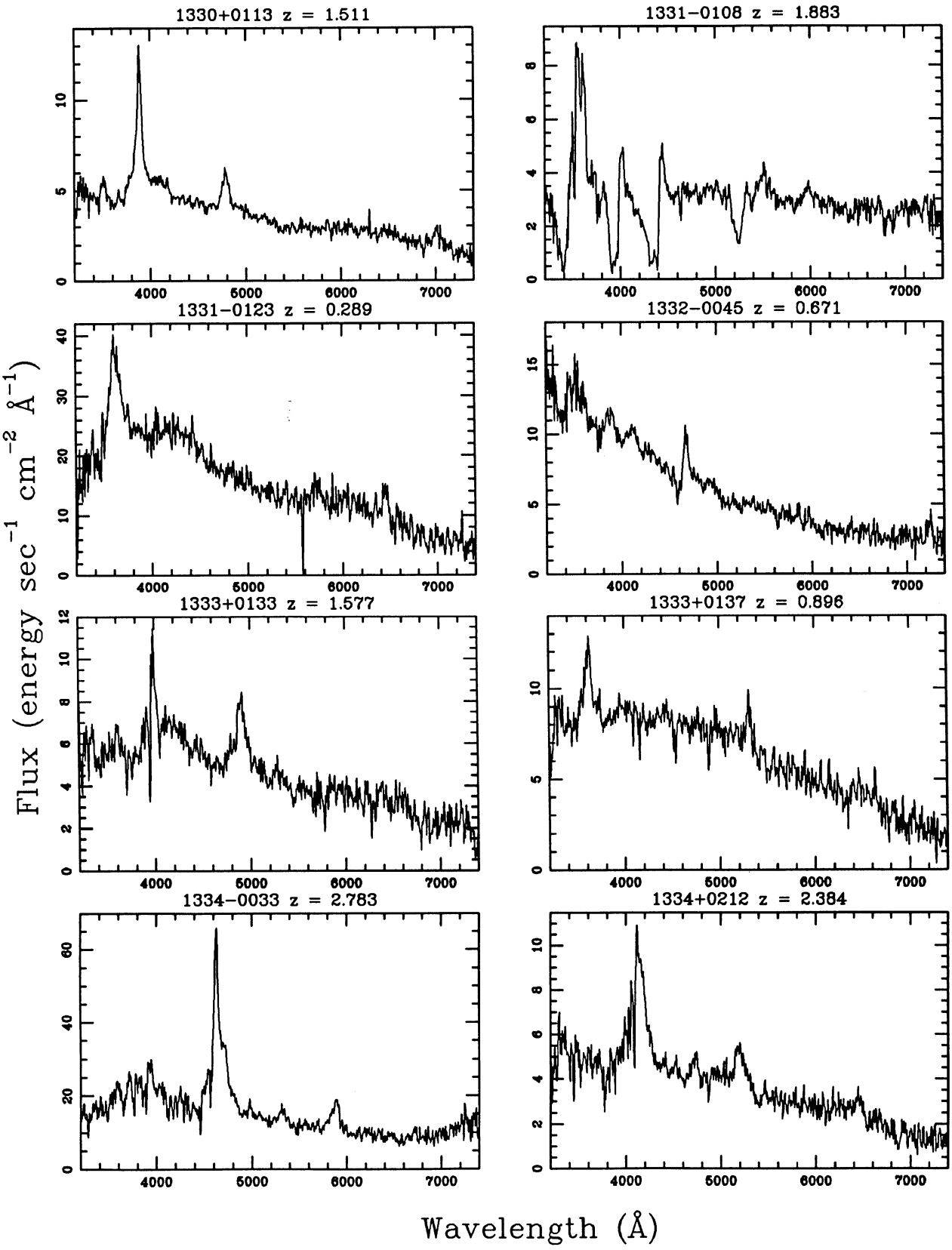

FIG. 1. (continued)

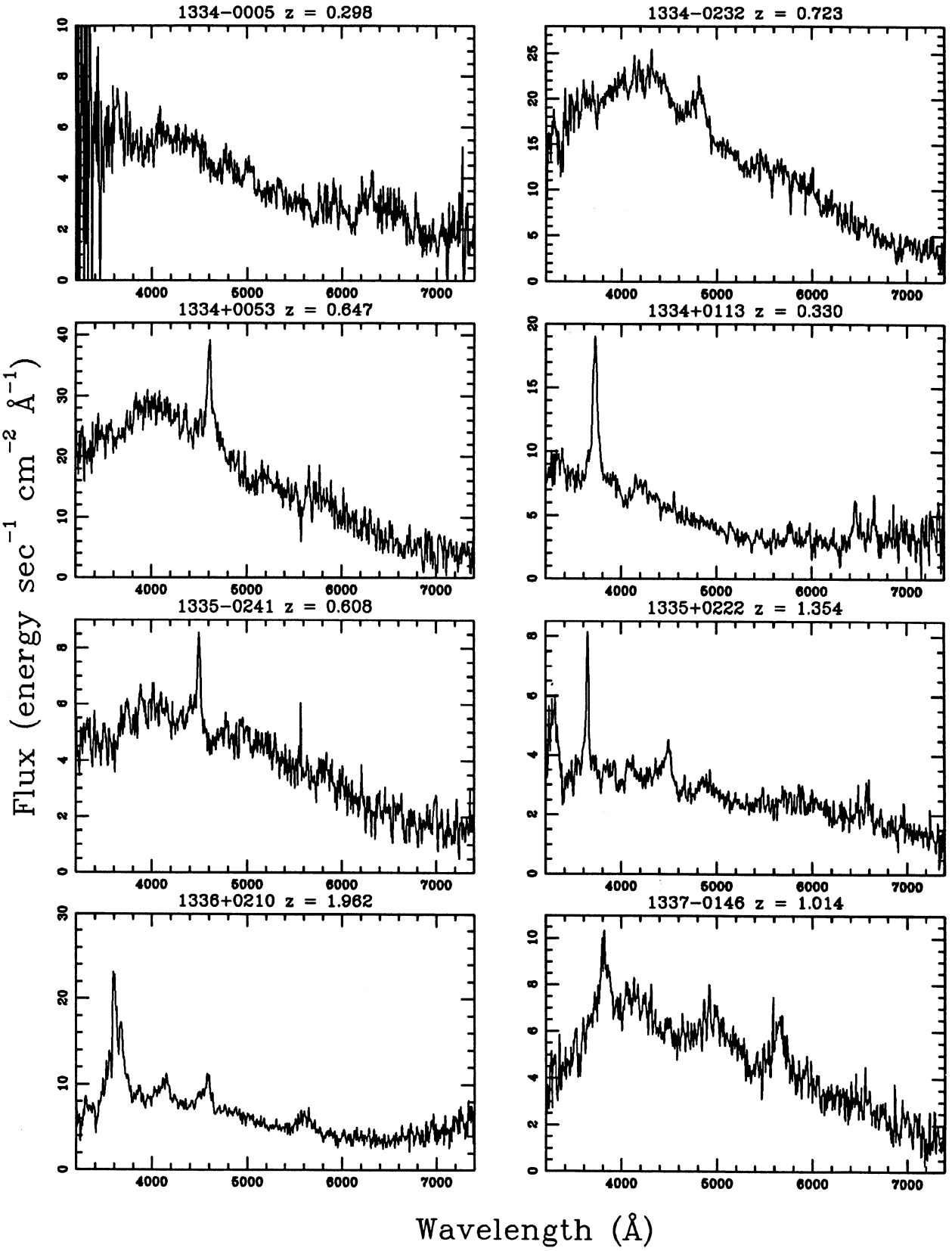

FIG. 1. (continued)

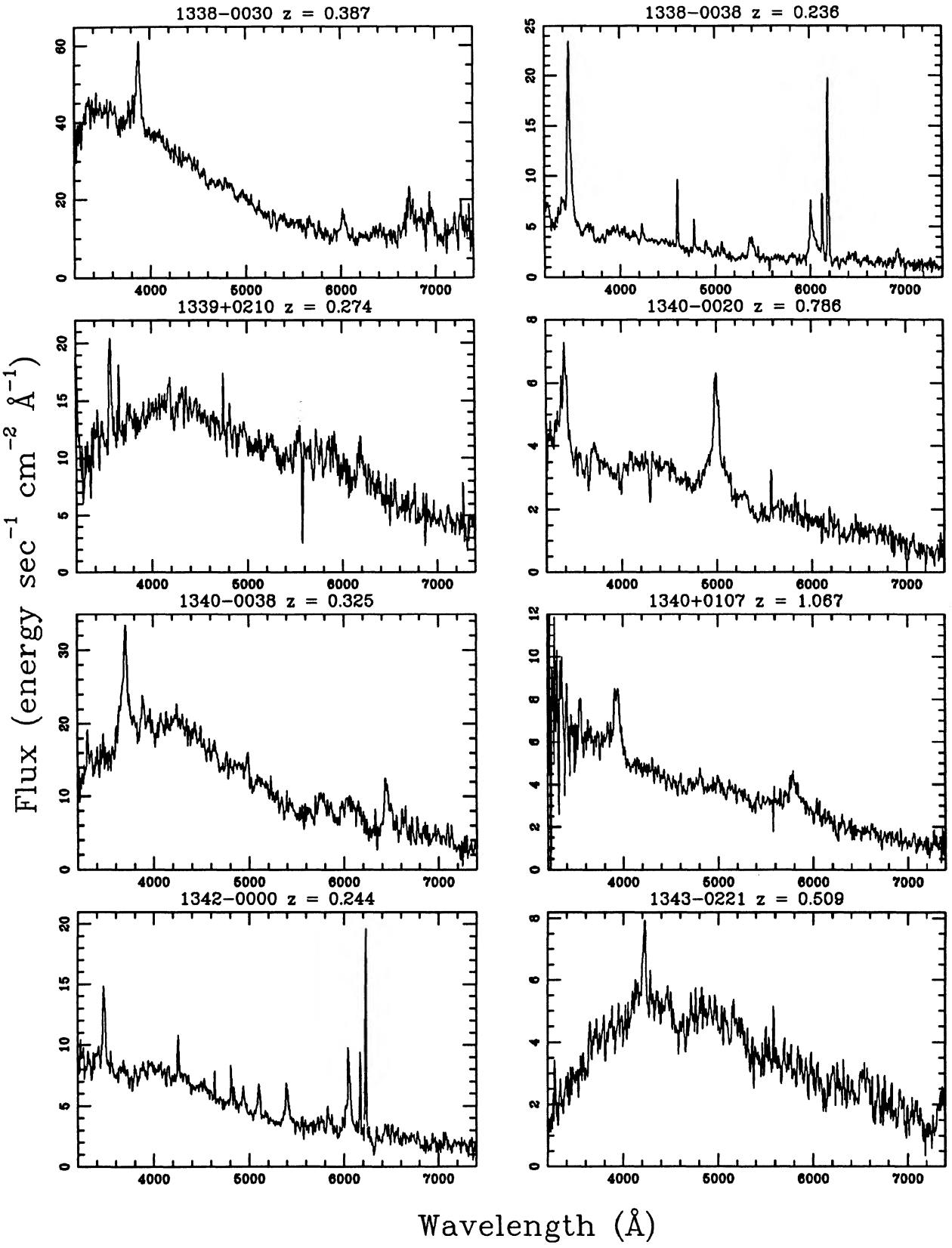

FIG. 1. (continued)

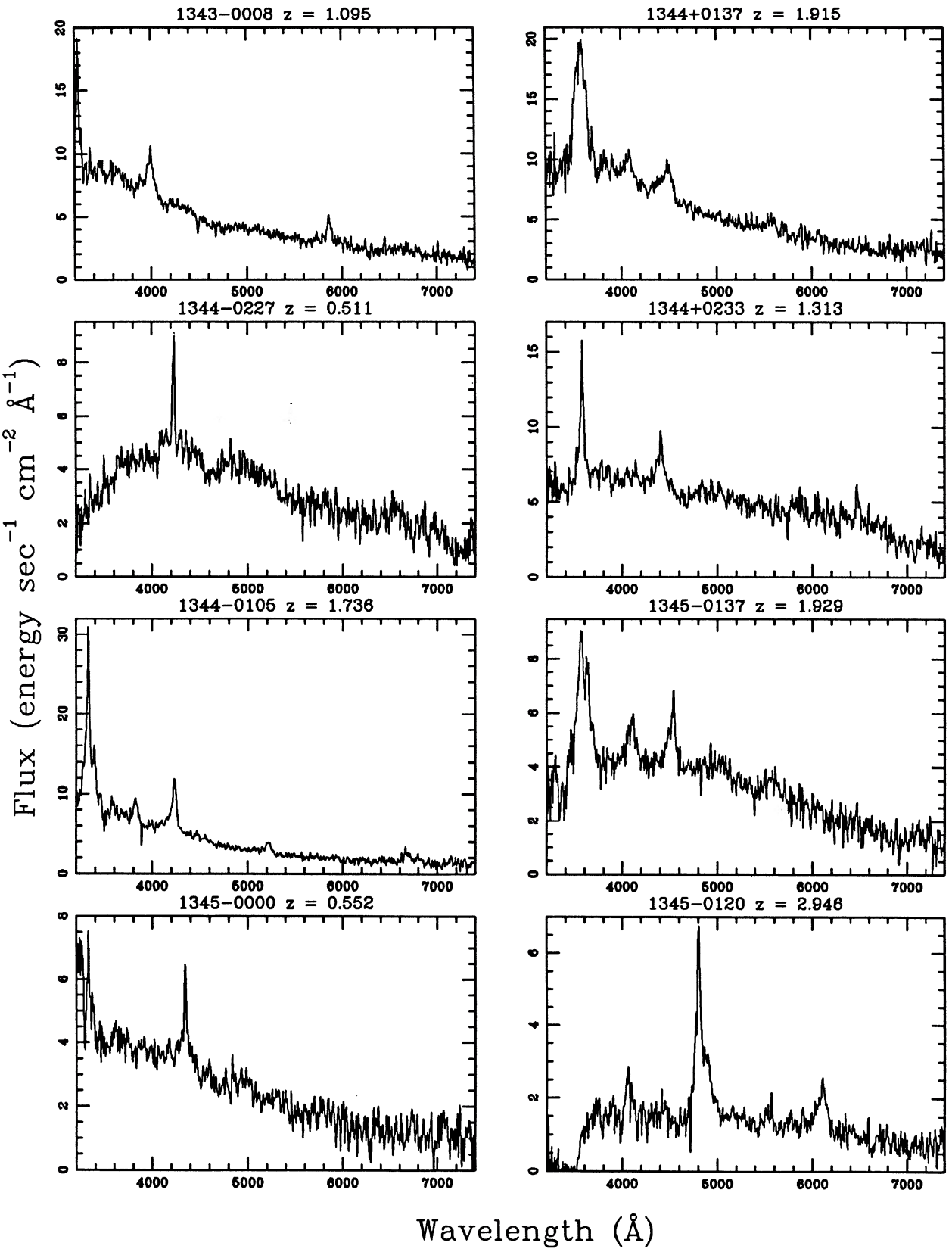

FIG. 1. (continued)

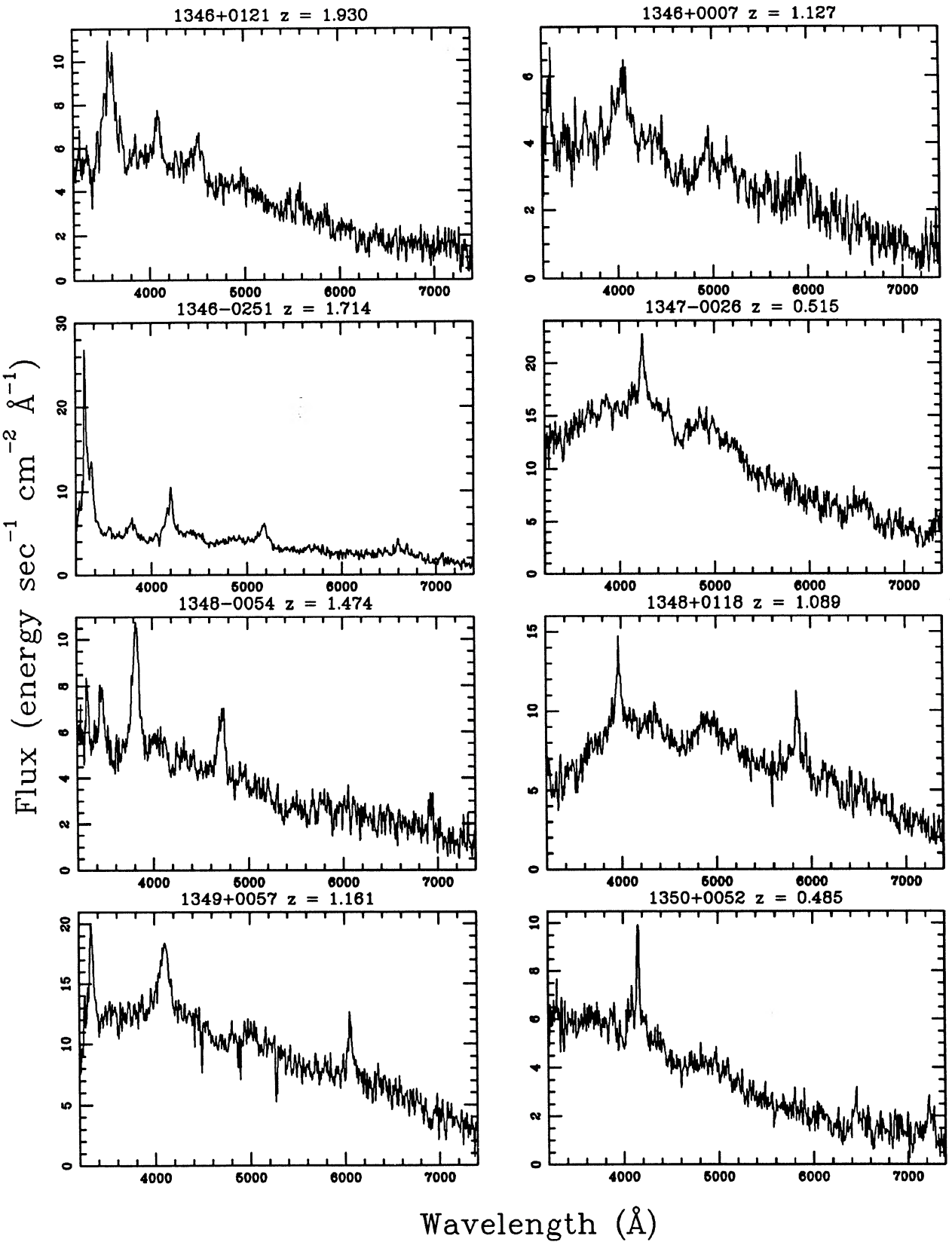

FIG. 1. (continued)

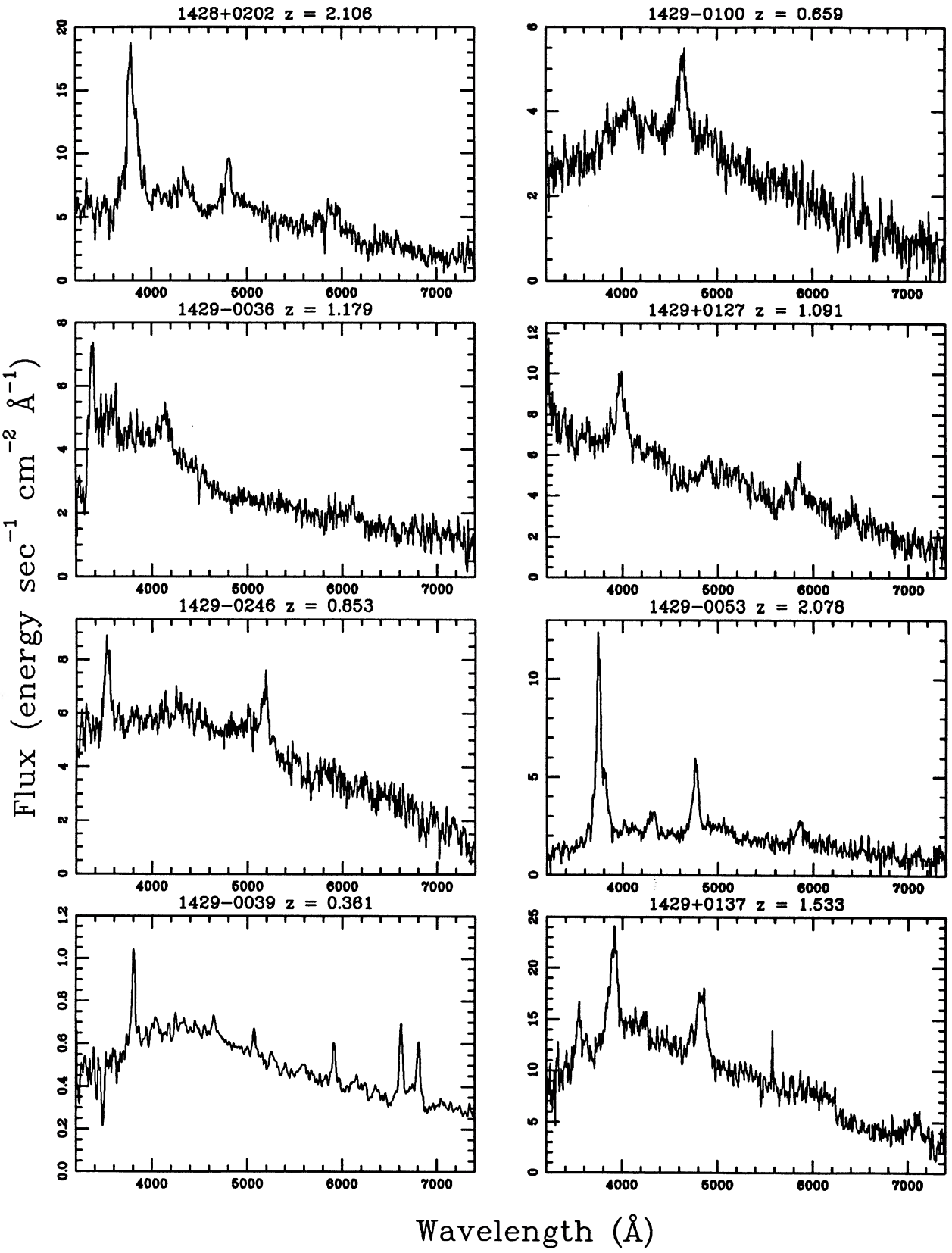

FIG. 1. (continued)

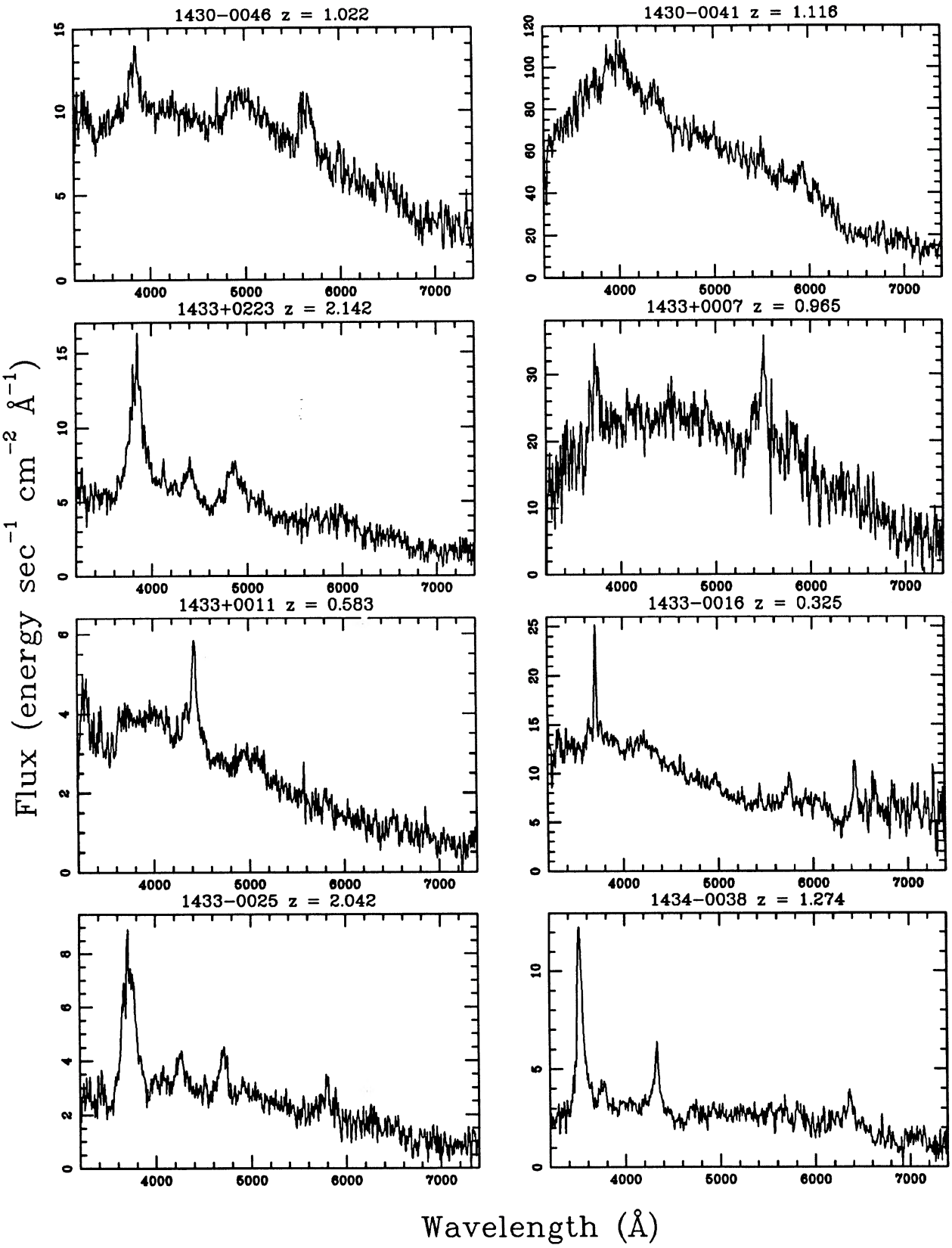

FIG. 1. (continued)

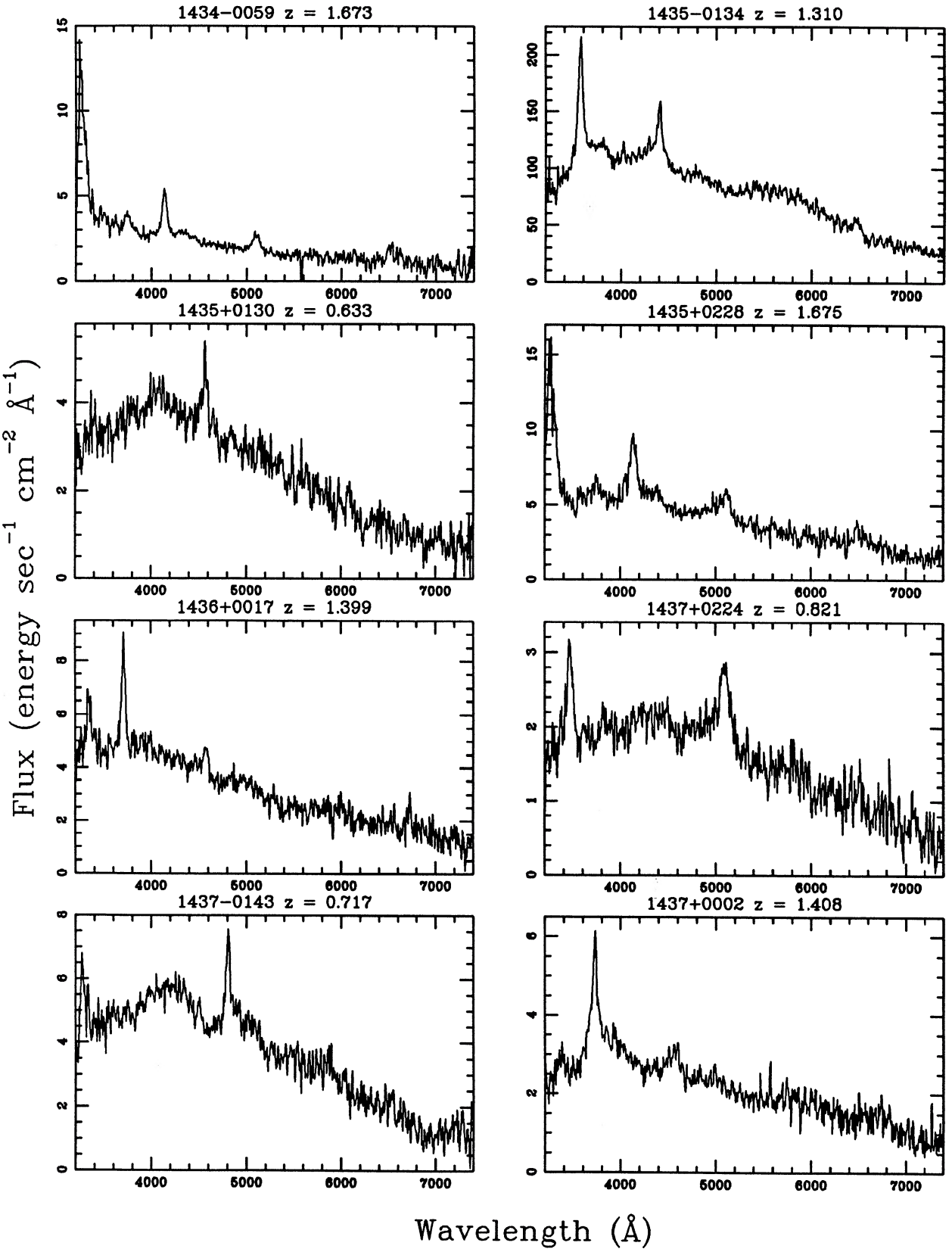

FIG. 1. (continued)

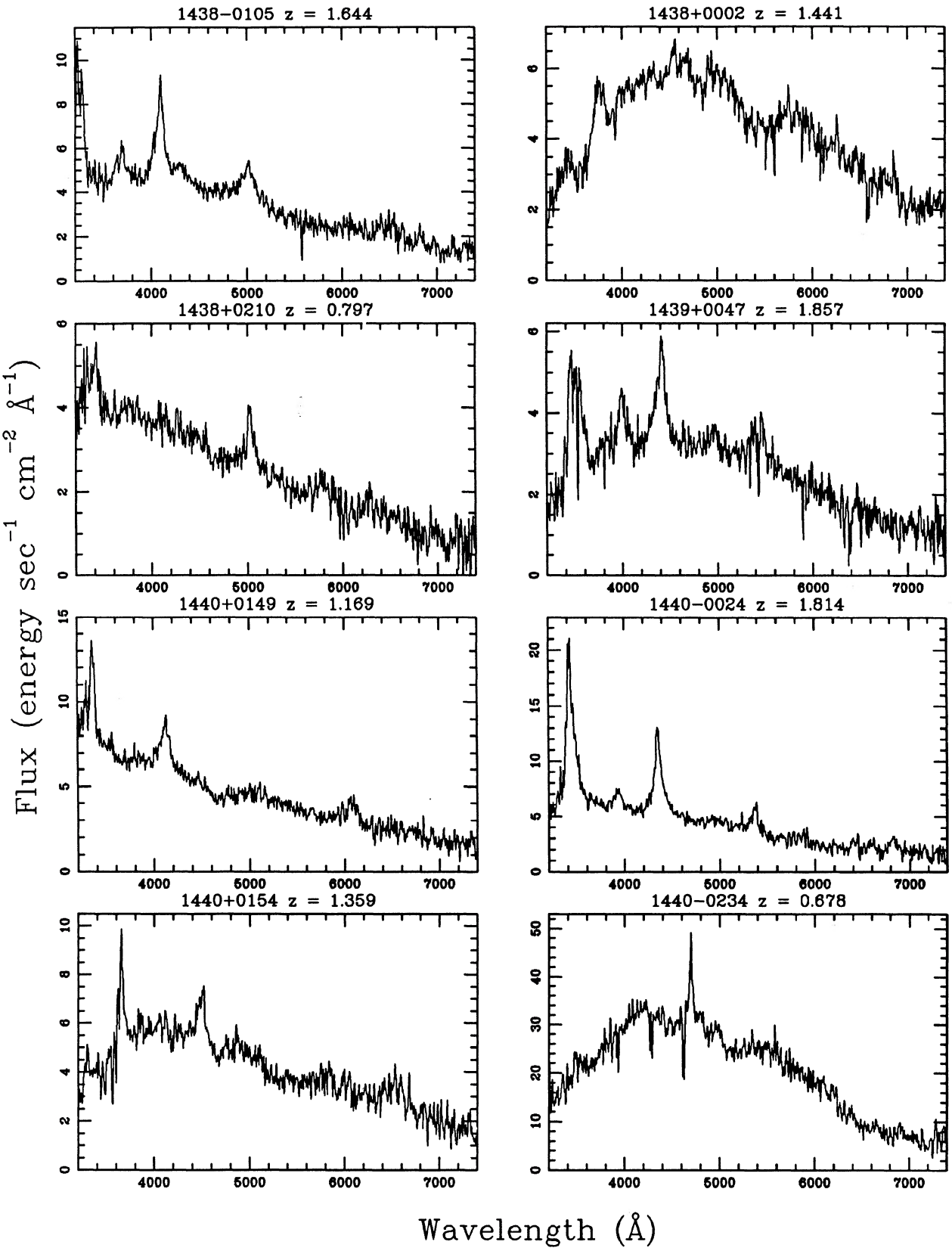

FIG. 1. (continued)

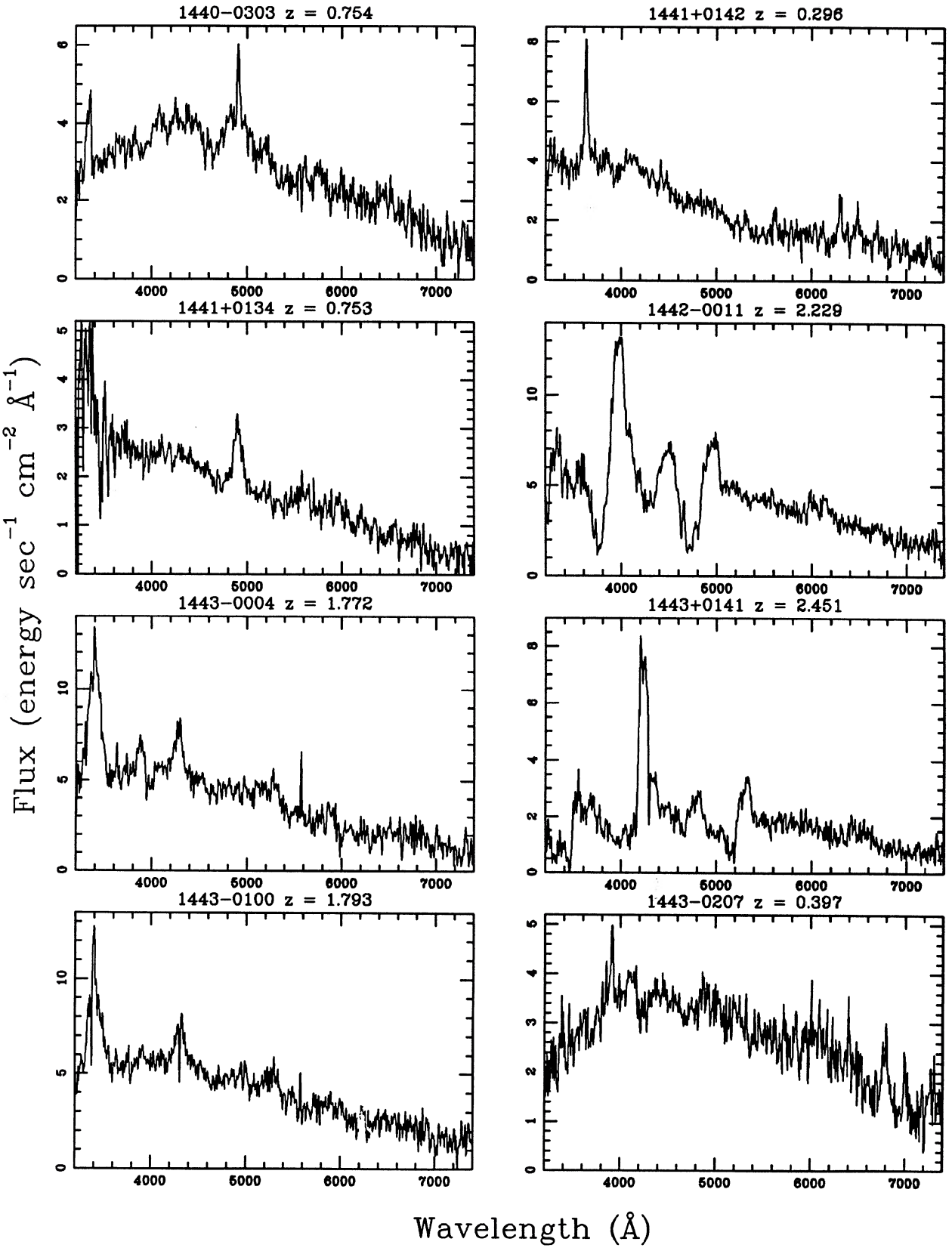

FIG. 1. (continued)

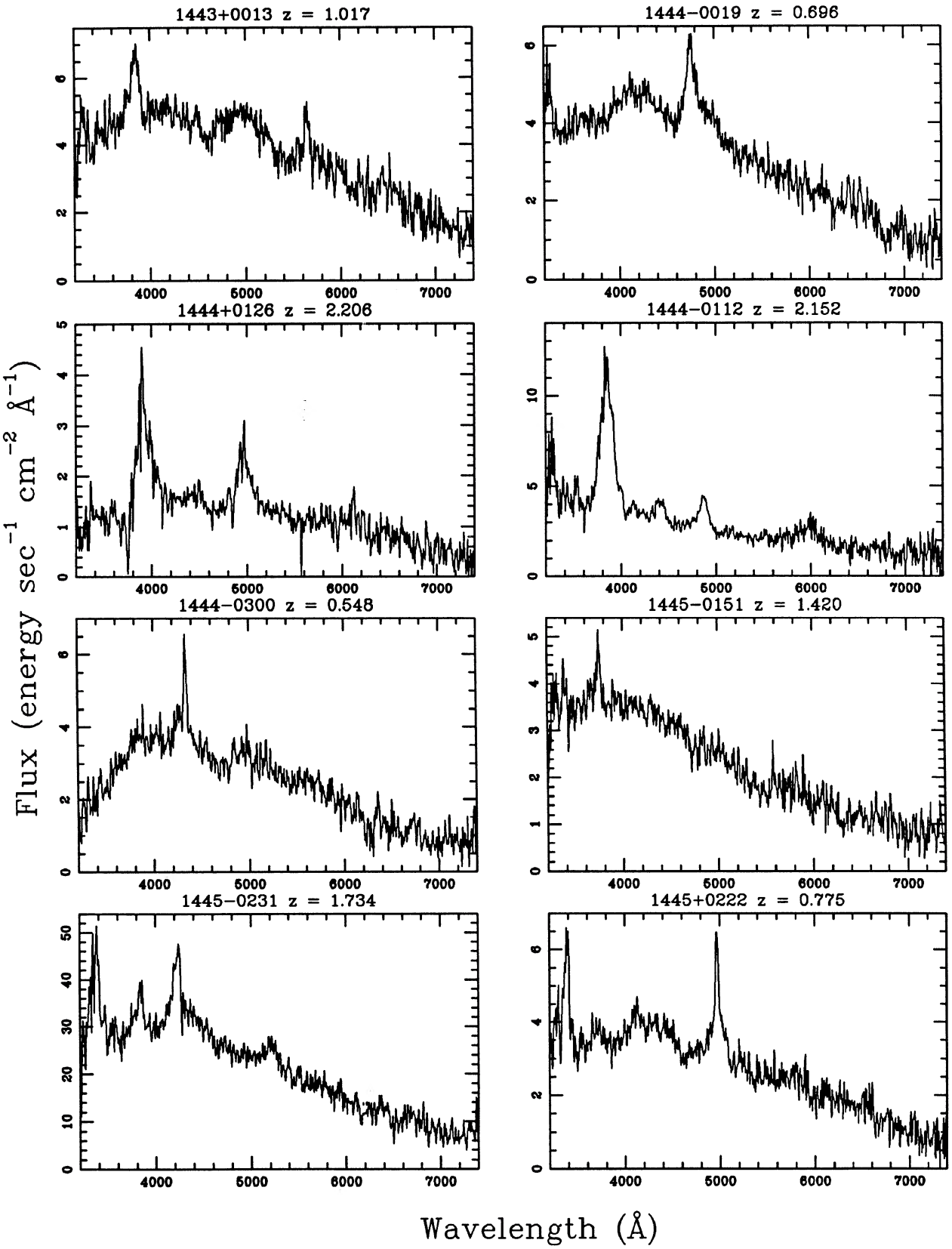

FIG. 1. (continued)

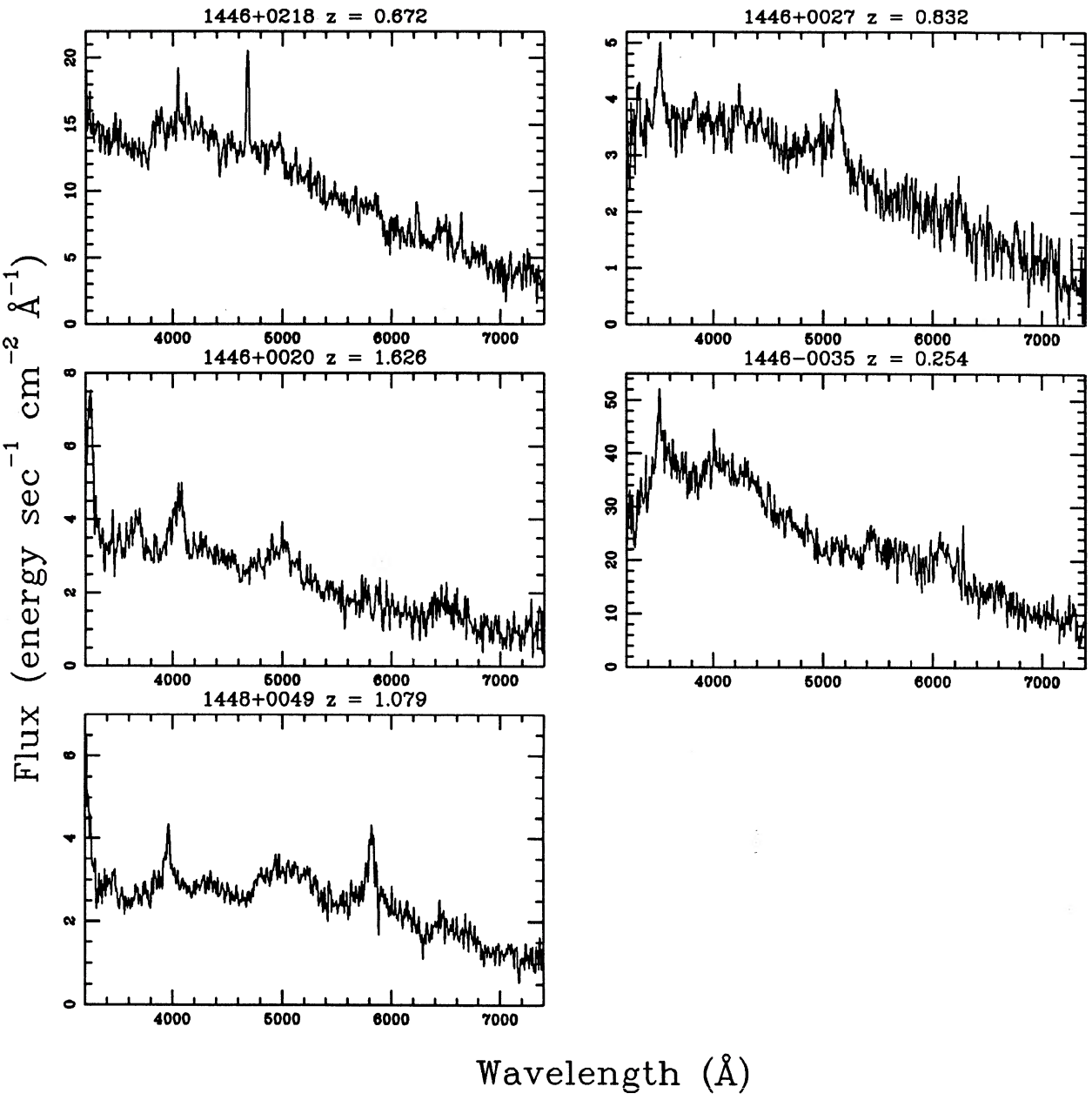

FIG. 1. (continued)

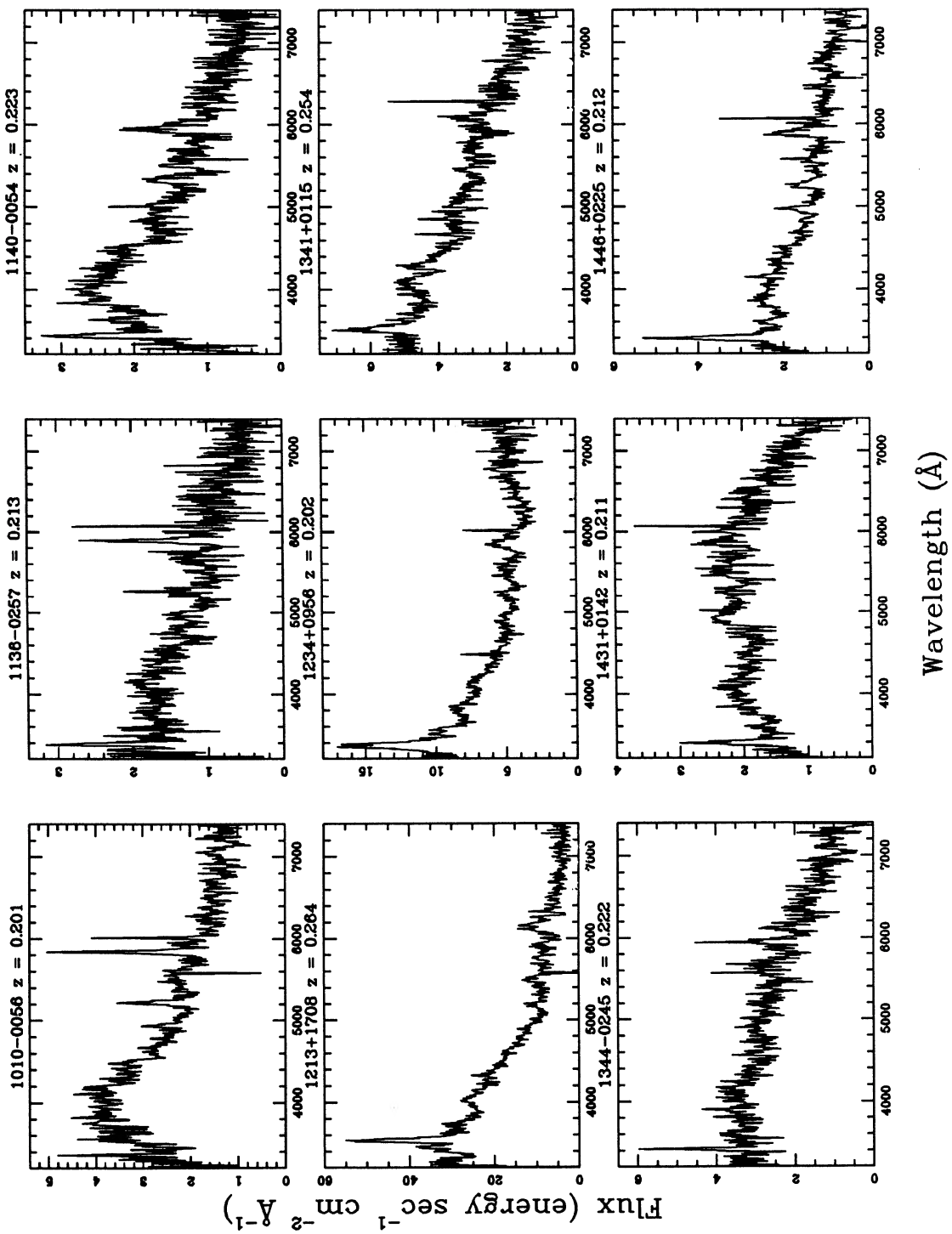

FIG. 2. Spectra of extragalactic objects with $M_{B_J} > -21.5$.

TABLE 3. AGNs with $Z_{cn} \geq M_J >$ absolute magnitude cutoff.

Designation	R.A. (1950)	Dec. (1950)	z_{em}	B_J	UT Date
1010–0056	10 10 43.96	–00 56 04.0	0.201	18.3	03/04/89
1136–0257	11 36 09.32	–02 57 27.2	0.213	18.5	02/20/88
1140–0054	11 40 14.54	–00 54 18.0	0.223	18.0	03/17/88
1213+1708	12 13 06.19	+17 08 02.5	0.264	18.7	04/30/89
1234+0956	12 34 54.13	+09 56 14.7	0.202	17.9	02/27/90
1341+0115	13 41 19.60	+01 15 13.2	0.254	18.3	03/16/88
1344–0245	13 44 04.77	–02 45 16.1	0.222	18.1	03/16/88
1431+0142	14 31 15.51	+01 42 46.4	0.211	18.2	03/13/88
1446+0225	14 46 09.37	+02 25 00.1	0.212	17.9	03/16/88

TABLE 4. AGNs and emission-line galaxies.

Designation	R.A. (1950)	Dec. (1950)	z_{em}	B_J	UT Date	Class.
1008+0058	10 08 10.22	+00 58 18.7	0.18	16.5	02/08/89	BLO
1011+0102	10 11 56.69	+01 02 49.2	0.15	18.6	02/26/90	NLO
1013–0056	10 13 17.15	–00 56 13.7	0.05	18.5	02/25/90	NLO
1016+0208	10 16 36.56	+02 08 57.7	0.19	18.5	03/04/89	BLO
1018+0218	10 18 02.20	+02 18 32.6	0.05	18.0	02/26/90	NLO
1023–0124	10 23 03.90	–01 24 45.4	0.15	17.2	02/27/90	NLO
1133+0039	11 33 07.33	+00 39 11.8	0.18	17.9	03/16/88	BLO
1133+0028	11 33 32.49	+00 28 32.8	0.11	18.5	02/20/88	NLO
1134+0156	11 34 32.86	+01 56 24.8	0.19	17.5	03/04/89	BLO
1136+0000	11 36 35.90	+00 00 28.9	0.14	17.7	03/04/89	BLO
1140+0212	11 40 03.01	+02 12 32.7	0.12	16.7	02/25/90	NLO
1141–0127	11 41 08.32	–01 27 55.7	0.10	16.3	03/04/89	BLO
1147+0025	11 47 49.83	+00 25 19.7	0.13	18.1	04/30/89	BLO
1150+0010	11 50 01.26	+00 10 57.6	0.13	17.5	04/30/89	BLO
1208+1506	12 08 28.66	+15 06 56.4	0.07	18.7	03/23/88	NLO
1210+1544	12 10 36.72	+15 44 59.7	0.13	17.9	03/23/88	NLO
1214+1432	12 14 06.87	+14 32 16.4	0.02	17.7	03/23/88	NLO
1217+1324	12 17 56.74	+13 24 39.2	0.03	18.0	03/23/88	NLO
1229–0133	12 29 39.41	–01 33 03.5	0.04	18.0	03/20/89	NLO
1236+0016	12 36 27.19	+00 16 58.3	0.09	17.4	03/20/89	NLO
1238–0100	12 38 01.02	–01 00 36.1	0.09	17.3	03/20/89	NLO
1240+1546	12 40 08.06	+15 46 01.2	0.07	16.0	04/30/89	BLO
1241+0933	12 41 10.08	+09 33 31.3	0.19	17.4	04/30/89	BLO
1244+0238	12 44 02.09	+02 38 30.0	0.05	15.2	04/02/87	BLO
1244+0059	12 44 05.73	+00 59 53.9	0.13	17.4	02/27/90	NLO
1246–0206	12 46 29.81	–02 06 15.9	0.09	17.5	12/29/86	BLO
1249+0108	12 49 40.81	+01 08 15.5	0.13	18.2	02/27/90	NLO
1313–0153	13 13 49.79	–01 53 56.5	0.15	18.2	04/30/89	BLO
1316+0207	13 16 37.70	+02 07 58.6	0.07	18.3	03/20/89	NLO
1318–0042	13 18 22.26	–00 42 03.4	0.11	17.8	02/12/86	NLO
1319–0124	13 19 04.79	–01 24 13.5	0.14	17.8	03/20/89	NLO
1320–0005	13 20 12.37	–00 05 33.3	0.08	18.8	03/20/89	NLO
1324+0207	13 24 10.68	+02 07 43.8	0.20	18.6	04/18/88	BLO
1324–0108	13 24 31.53	–01 08 42.8	0.17	18.2	03/20/89	BLO
1325–0113	13 25 59.78	–01 13 47.2	0.15	16.6	02/27/90	BLO
1326–0259	13 26 48.31	–02 59 34.2	0.08	16.2	04/30/89	NLO
1332–0159	13 32 54.35	–01 59 41.3	0.11	17.5	03/21/88	NLO
1434+0020	14 34 30.45	+00 20 04.8	0.14	17.5	04/30/89	BLO

TABLE 5. HB QSOs not in the LBQs.

HB Designation	R.A.	Dec.	m_{HB}	B_J	Notes
1021–006	10 21 56.2	–00 37 42.9	18.22	18.6	c
1206+119	12 06 44.7	+11 55 12.0	17.9	17.6	c
1208+101	12 08 23.7	+10 11 09.3	not given	18.8	a
1209+105	12 08 55.1	+10 31 33.7	18.47	20.0	a
1209+093	12 09 01.7	+09 19 02.9	18.5	19.4	a
1210+121	12 09 59.9	+12 07 52.9	17.8	17.8	d
1213+132	12 13 31.8	+14 17 54.0	18.9	18.9	a,b,e
1214+106	12 14 28.5	+10 36 33.3	18.5	19.0	a
1221+113	12 21 47.4	+11 24 00.0	18.	18.7	a
1222+131	12 22 39.7	+13 08 29.6	18.5	18.0	c
1223+123	12 23 14.9	+12 20 50.6	18.8	19.4	a
1224+127	12 24 41.1	+12 44 40.1	18.6	18.6	c
1224+095	12 24 44.0	+09 30 44.8	18.73	19.3	a
1227+140	12 27 02.3	+14 03 03.9	17.40	17.8	c
1227+151	12 27 04.3	+15 07 34.3	19.2	18.5	c
1228–020	12 28 39.9	–02 00 30.7	18.98	19.2	a
1232+134	12 32 26.7	+13 25 26.4	19.5	18.8	c
1232–002	12 32 32.1	–00 13 52.3	18.86	18.7	a
1232+125	12 32 56.2	+12 30 10.4	17.21	17.7	c
1233+108	12 33 32.7	+10 51 19.7	18.5	18.8	a
1234–007	12 34 16.0	–00 42 56.0	19.00	18.7	a
1237–009	12 37 25.8	–00 54 17.8	18.73	18.7	f
1321+024	13 21 27.0	+02 26 44.6	17.	18.1	g
1331+025	13 31 17.7	+02 34 00.1	18.85	18.8	a,b
1336–000	13 36 59.1	–00 01 08.1	18.3	20.9	a
1337–024	13 37 53.8	–02 24 10.4	not given	18.8	a
1337+005	13 37 57.8	+00 30 17.5	not given	18.5	a
1338–013	13 38 16.0	–01 19 40.1	18.	19.1	a
1338–018	13 38 46.6	–01 53 48.9	not given	17.4	c
1343+012	13 43 41.8	+01 12 05.3	not given	18.8	a
1346+001	13 46 44.0	+00 07 50.9	not given	18.9	a

Notes to TABLE 5

a — Object fainter than LBQS field magnitude limit
b — Greater than 5 arcsecond error in HB catalogue position
c — Spectrum overlapped on objective–prism plate
d — BL Lac object; identified incorrectly in Paper I as 1210+127
e — HB declination off by exactly 1 degree
f — QSO, $z = 0.823$
g — UM 571 original objective prism identification (MacAlpine and Williams (1981)) is incorrect.
This object is a star.

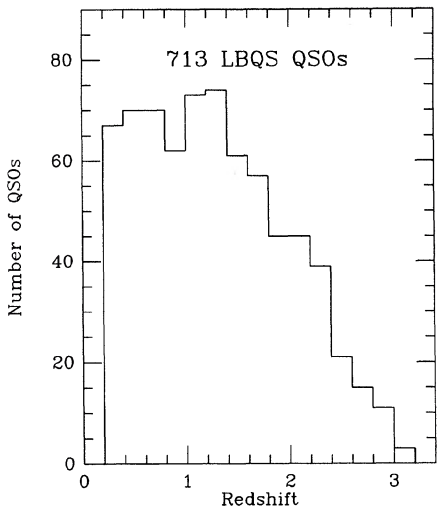

FIG. 3. Redshift histogram of the partially completed LBQS, including all objects in this paper and those in Papers I and II.

sion or absorption features and its color is not particularly extreme relative to Galactic stars. While the LBQS is capable of selecting objects such as 1237-009 (in fact it is contained in the list of the next twelve candidates in this field that would be observed if the success rate were thought to warrant further observations), it lies in a region of parameter space where our selection efficiency is significantly below unity. In a future paper we will present detailed completeness estimates as a function of QSO redshift, absolute magnitude and spectral properties.

We have also compared our QSO list with that from the much deeper uvx survey of Boyle *et al.* (1990). They find three QSOs within our magnitude and redshift range in the fields covered by the present plate material, of which we have independently identified two. The third is 1237-0054 (1237-009) discussed above.

Thus, of the 64 previously known QSOs in the 13 LBQS fields published to date, which were included in our magnitude-limited sample of processable spectra, only one bona fide QSO has escaped detection by our selection process. One further object, the BL Lac 1210 + 121 which has no reported redshift, also eluded our selection procedures, in this case because the very red spectral energy distribution means the object's objective-prism spectrum is not greatly different from many Galactic stars.

Figure 3 shows the redshift histogram for the LBQS to date. The virtual absence of discontinuities in this histogram at any redshift and the extended range of redshifts covered attests to the success of the LBQS selection procedures.

The LBQS is supported by National Science Foundation Grant Nos. AST 90-01181, and 90-05117, for which we are grateful. The LBQS would not have been possible without the active support of the United Kingdom Schmidt Telescope Unit and the staff of the Automated Plate Measuring facility. We acknowledge the computing support provided by the Starlink Project which is funded by the UK SERC. PCH is pleased to acknowledge the receipt of a Royal Society Research Fellowship. P.J.F. is supported by an SERC postgraduate studentship.

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