METEORITES: CHRONOSTRATIGRAPHIC MARKERS OF THE FRONTIER MOUNTAIN BLUE ICE FIELD (ANTARCTICA). L. Folco[1], K. C. Welten[2], K. Nishiizumi[2] and A. J. T. Jull[3]. [1]Museo Nazionale dell'Antartide, Siena, Italy E-mail: folco@unisi.it. [2]Space Sciences Laboratory, University of California, Berkeley, CA 94720, USA. [3]NSF-Arizona AMS Laboratory, University of Arizona, Tucson, AZ 85721, USA.

Introduction: Absolute dating of Antarctic ice is problematic. Meteorites can provide chronological constraints on the age of the ice cropping out at the Frontier Mountain meteorite trap when their terrestrial age is placed in a glaciological context.

Glaciological setting: A detailed description of the glaciology of the Frontier Mountain blue ice field (Fig. 1) is given by [1]. Four meteorites, FRO 8401 (L6), 99028 (L6), 93005 (L5) and 93054 (H6), were found along a stretch of ice where an ideal section of the Frontier Mountain blue ice crops out (Fig. 1). The section extends for about 5 km across *"the scatterfield"* [1] in a roughly SE-NW direction. As indicated by the geometry of tephra layers embedded in the ice, the structure of the ice along the section is essentially a SE-dipping monocline with increasingly older layers moving northwards. Since the four meteorites have much heavier masses (from 772 and 1665 g) than the 200 g wind transport threshold [1], they were most likely not wind-drifted across the ice field.

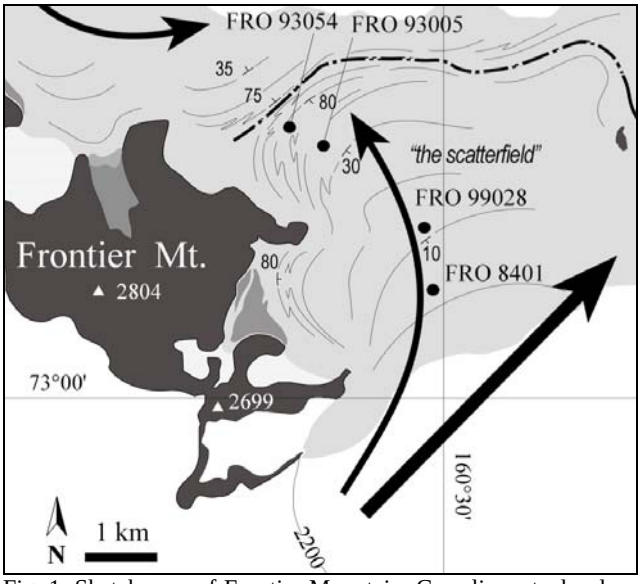

Fig. 1. Sketch map of Frontier Mountain. Grey lines: tephra layers contours and bedding. For other symbols, see [1].

Terrestrial ages: The ^{14}C terrestrial age of FRO 8401, 99028 and 93005 are 13±2, 21±3 and 27±2 kyr respectively [2]. The $^{41}Ca/^{36}Cl$ age of FRO 93054 is 40±10 kyr [2].

Conclusion: The terrestrial age geographic distribution of the four large meteorites (Fig.1) is best explained by delivery of meteorites at the ice surface through the "ice-flow model" rather than direct fall. As a consequence, such distribution indicates that the age of the ice under ablation at Frontier Mountain is up to 40±10 kyr.

References: [1] Folco L. et al. 2002. *MAPS* 37:209-228. [2]. Welten K. C. et al. *MAPS* submitted.