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HYDROLOGY TEAM PRESENTED BY: ROBERT RAGAN

THE DEVELOPMENT AND MANAGEMENT OF HIGH QUALITY HUMAN HABITATION ON A TERRESTRIAL SCALE IS CONTINGENT ON THE RESOLUTION OF INCREASINGLY COMPLEX ISSUES RELATED TO THE DEVELOPMENT AND MANAGEMENT OF A LIMITED WATER RESOURCE.

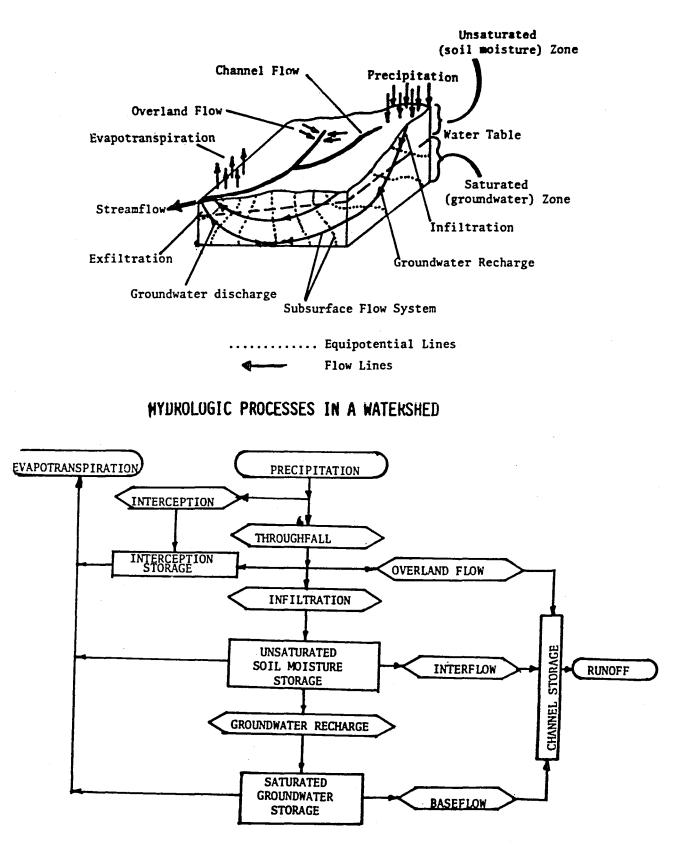
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HYDROLOGY

HYDROLOGY IS AN EARTH SCIENCE CONCERNED WITH THE OCCURRENCE, DISTRIBUTION, MOVEMENT, AND PROPERTIES OF THE WATERS OF THE EARTH AND THEIR ENVIRONMENTAL RELATIONSHIPS.

THE HYDROLOGIST MUST PROVIDE QUANTITATIVE INFORMATION ON THE TEMPORAL/SPATIAL DISTRIBUTION OF WATER FOR THE PLANNING, DESIGN AND OPERATIONS/MANAGEMENT DESISION MAKING PROCESSES USING:

> HISTORICAL RECORDS REAL TIME DATA STATISTICAL ANALYSIS SYSTEM SIMULATION



TYPICAL HYDROLOGIC MODEL STRUCTURE

• MISSION AREAS: MUNICIPAL/INDUSTRIAL WATER SUPPLY.

IRRIGATION

FLOOD/DROUGHT CONTROL

QUALITY MAINTENANCE

ENERGY

RECREATION

 PROCESSES: PRECIPITATION SNOW PACK SOIL MOISTURE SURFACE STORAGE GROUNDWATER EVAPO-TRANSPIRATION STREAMFLOW

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GENERAL PROBLEMS

- CURRENT INFORMATION GATHERING TECHNIQUES PROVIDE VERY LIMITED DEFINITION OF THE SYSTEM
- SIMULATION MODELS ARE DELIBERATELY DESIGNED TO USE LIMITED DATA
- SPATIAL/TEMPORAL DEFINITION IS EXTREMELY LIMITED
- ABILITY TO DEFINE THE STATE OF INDIVIDUAL PROCESSES IS LIMITED
- MODELS DO NOT REFLECT STATE OF THE ART KNOWLEDGE BECAUSE OF DATA DEFINITION PROBLEMS

MAJOR PROBLEM AREAS REQUIRING MULTISPECTRAL IMAGING-BASED RESEARCH TO ADVANCE SCIENCE

- A DEFINITION OF SPATIALLY DISTRIBUTED EVAPOTRANSPIRATION RATES FOR LARGE AREAS
- E FLOODING DYNAMICS OF WETLANDS
- A DEFINITION OF TEMPORAL/SPATIAL DISTRIBUTION OF SOIL MOISTURE DYNAMICS IN LARGE AREAS
- B DETERMINATION OF SNOW WATER EQUIVALENT
- G DEFINITION OF RUNOFF AND SEDIMENT YIELD FROM UNGAGED WATERSHEDS
- A DETERMINATION OF SPATIAL/TEMPORAL DISTRIBUTIONS OF STORM RAINFALL
- C RELATIONSHIP BETWEEN REMOTELY MEASURED SURFACE ROUGHNESS AND HYDRAULIC ROUGHNESS OF LAND SURFACES AND STREAM NETWORKS
- C
 DEFINITION OF HYDROLOGIC PROPERTIES OF SOILS AND SURFICIAL MATERIALS
- INTERPRETATION OF ACTIVE/PASSIVE MEASUREMENTS OF FLOURSCENCE AND POLARIZATION OF WATER AND ITS CONTAINED SUBSTANCES
- D DETERMINATION AND MODELING OF THREE DIMENSIONAL CHARACTERISTICS OF WATER BODIES
- C INTERPRETATION OF SPECTRAL EMISSIVITY OF LAND AND WATER SURFACES
- C DETERMINATION OF THE RELATIONSHIP BETWEEN TEXTURE OF TERRAIN AND THE HYDROLOGIC RESPONSE OF WATERSHEDS
- D DISCRIMINATION BETWEEN SEDIMENT AND CHLOROPHYLL IN WATER
- C IMPROVING THE DETERMINATION OF HYDROLOGIC LAND COVER AS RELATED TO THE MODELING OF THE RUNOFF PROCESSES
- A IMPROVING IRRIGATION MANAGEMENT STRATEGIES
- F ROLE OF BARRIER ISLAND DYNAMICS IN COASTAL ZONE PROCESSES

A. Water Balance Arablems Centering on Surfore / Atmosphere Interforms 8 Unique Problem Arca c. Basin Physiography D. Water Quality ESF Unique Aublan Arcos G. Objectue of A-E is to provide scinitize bood to allow significant improvement in modeling 54