

HYDROLOGIC PROVINCES OF MARS. R. A. De Hon, Department of Geography, Texas State University, San Marcos, TX, 78666
<dehon@txstate.edu>

Summary: A large scale map of the hydrologic provinces of Mars provides insights into global drainage and sedimentation patterns.

Introduction: Papers describing martian hydrologic provinces and sedimentary basins have been presented in past Lunar and Planetary Science Conferences [1-3]. This presentation is a summary of materials prepared for publication in *Lakes on Mars* [4]. Publication in book format does not allow printing of a large map. There the hydrologic provinces were delineated on a small scale topographic map. A large scale map of the hydrologic provinces based on the USGS 25M scale map [5] will be presented at the LPSC poster session (Fig. 1).

Provinces: Mars' hydrologic provinces are mapped as eight regional watersheds defined by topographic divides and terminal basins or low elevation outlets (Table I) Each province is characterized by an elevated source region and a lowest-level closed basin that is the terminal collection point for runoff within the province. Names for the provinces are derived from their terminal plain. Most—but not all—terminal basins have one or more low divides which allow spillover to lower provinces. Some of the terminal basins have been filled with sediment to the point that they are no longer closed basins. Water and sediment pass through to lower adjoining watersheds. Vastis Borealis is the lowest catchment and the ultimate collection point of water moving on the surface. Hellas Province is the only other province without a lower outlet.

TABLE I: Summary of Hydrologic Provinces

Collection area	Terminal Plane	Basin Center	Overflow region
Southern Highlands	Austale-Parva Planum	65°S; 65°E	Argyre or Aeolis Planitia
	Hellas Planitia	5°S; 200°E	None
	Argyre Planitia	50°S; 320°E	Chryse Planitia
Central Highlands	Isidis Planitia	10°N; 155°E	Vastis Borealis
	Aeolis Planitia	5°N; 330°E	Vastis Borealis
	Amazonis Planitia	55°N; 180°E	Vastis Borealis
	Chryse Planitia	50°N; 330°E	Vastis Borealis
Northern Lowlands	Vastis Borealis	70°N; 330°E	Lowest level

Hydrologic provinces define source areas and collection sites for major sediment dispersal on the planet. Downslope transport by water, ice, and mass-wasting is a major, but not the only, sediment transport system on the planet.

Redistribution of materials by meteor impact and by aeolian processes add to the sedimentary column. Ultimately dust storms may provide planet-wide correlative horizons.

References: [1] De Hon, R.A., 2001, **LPS XXXIII**, abs 1915; [2] De Hon, R.A., 2001, **LPS XXXII**, abs. 1361; [3] De Hon, R.A., 1995, **LPS XXVI**, 327-328; [4] De Hon, R.A. in *Lakes on Mars*, N.A. Cobrol and E.A. Grin, eds.; [5] USGS, 2003, **Geol. Inves. Series Map** I-2782.

