STREAMLINED ISLANDS IN CHRYSE PLANITIA, MARS: CLUES TO CATASTROPHIC FLOODS AND A POSSIBLE OCEAN. M. R. Kennedy[1] and P. R. Christensen[1], [1]Arizona State University, Mars Space Flight Facility, P.O. Box 876305, Tempe, AZ, 85287; email: megan.kennedy@asu.edu.

Introduction: Large outflow channels presumably carved by water flow from catastrophic floods empty into Chryse Planitia in the northern lowlands of Mars [1]. It has been postulated that the northern lowlands, possibly including the Chryse Planitia region, were once covered by a liquid water ocean [2,3], with the source of water most likely being that from the catastrophic flooding of outflow channels that empty into this region.

Streamlined islands in the shape of teardrops exist in this area and are presumed to be carved by flowing water from the outflow channels [4]. Their dimensions and properties offer us an insight into the flows that carved them, and thus also possibly into the flows that once formed an ocean on Mars. Data from the Mars Global Surveyor (MGS) Mars Orbiter Laser Altimeter (MOLA) instrument and the Mars Odyssey Thermal Emission Imaging System (THEMIS) instrument [5] provide us with the dimensions of the islands and insight into their intrinsic material properties by looking at them in the infrared. These measured properties can give us clues about the catastrophic floods that once flowed through this region and about the formation of streamlined islands themselves.

Methods: Sixteen streamlined, or "teardrop," islands in the Chryse Planitia region were measured and analyzed to gain information about the floods that formed them and the possible ocean that may have once inhabited this area. Only islands formed by crater obstructions at their heads were considered for consistency and a more stringent constraint.

Results: An average length / width ratio of 2.42 exists for these islands (Table 1), which is lower than that found in previous studies [6,7]. This may be indicative of an imperfect streamlined shape, which could mean formation by faster-moving water or shorter-lived floods. Looking at the islands in the infrared reveals more structure and detail than can be seen with visible images only (Fig. 1). The geomorphology of the islands and their distance from the mouths of outflow channels removes Parker's [2,3] contact 1 as a possible ocean shoreline, but leaves contact 2 as a distinct possibility for a past ocean contact.

References: [1] Baker, V.R. et al. (1992) *Mars*, ed. by Keiffer et al., 493-522. [2] Paker, T.J. et al. (1989) *Icarus, 82*, 111-145. [3] Parker, T.J. et al. (1993) *JGR, 98*, 11,061-11,078. [4] Carr, M.H. et al. (1976) *Science, 193*, 766-776. [5] Christensen, P.R. et al. (2004) *Space Science Reviews, 110*, 85-130. [6] Baker, V.R. and Kochel, R.C. (1978) *Proc. Lunar Planet. Sci. Conf. 9th*, 3193-32003. [7] Komar, P.D. (1983) *Geology, 11*, 651-654.

Island	Length(km)	Width(km)	L/W
Kas1	82	39	2.10
Kas2	158	43	3.67
Kas3	34	14	2.43
Ares1	44	20	2.20
Ares2	63	33	1.91
Ares3	46	27	1.70
Ares4	125	60	2.08
Ares5	20	8	2.5
Ch1	66	32	2.06
Ch2	52	15	3.47
Ch3	22.5	10	2.25
Ch4	44	27	1.63
M1	51	26	1.96
ST1	58	17.5	3.31
ST2	64	23	2.78
ST3	63	24	2.63
AVG	**62**	**26.2**	**2.42**

Table 1 (above): Measured lengths and widths of streamlined islands and derived L/W ratios.
Figure 1 (below): THEMIS nighttime IR mosaic of a streamlined island near Ares Vallis.