PRESS EMBARGO

The following presentation will be published in Nature on March 17th, and is subject to Nature’s embargo on press reporting.
Pack-ice on Mars

John Murray, Jan-Peter Muller, Gerhard Neukum & the HRSC Mars Express team
Dao & Niger Valles
Evidence of catastrophic flooding events
Where does the water end up?
Pack-ice
MARS
Pressure ridges

Arctic Ocean
Pressure ridges round an artificial island
1100m diameter

Maximum Depth = 45 metres

Approximate Diam. : outer rim height Ratio for fresh impact Craters = 0.04
Age = 5 million years

(very young)
MOLA altimeter data: $0^\circ 0.005$ slope

$=$ EXTREMELY FLAT

(Same slope as water surfaces during Tidal events in Bristol Channel)
Alternative ideas: Very fluid lava flows?
Ice MUST be dust-covered
Water escape under pressure

Cracking of cryosphere

Water-rich layer

Geothermal heating
1. Warm wet subterranean places on Mars have existed throughout Mars’ geological history, and life may have developed there.
2. Periodically, water eruptions disgorge the contents of these habitats on to the surface, most recently 5 million years ago to form the Elysium frozen sea.
3. Elysium is the most likely place to find past or present life on Mars.