ALHAT Field Test Results

NGST Briefing

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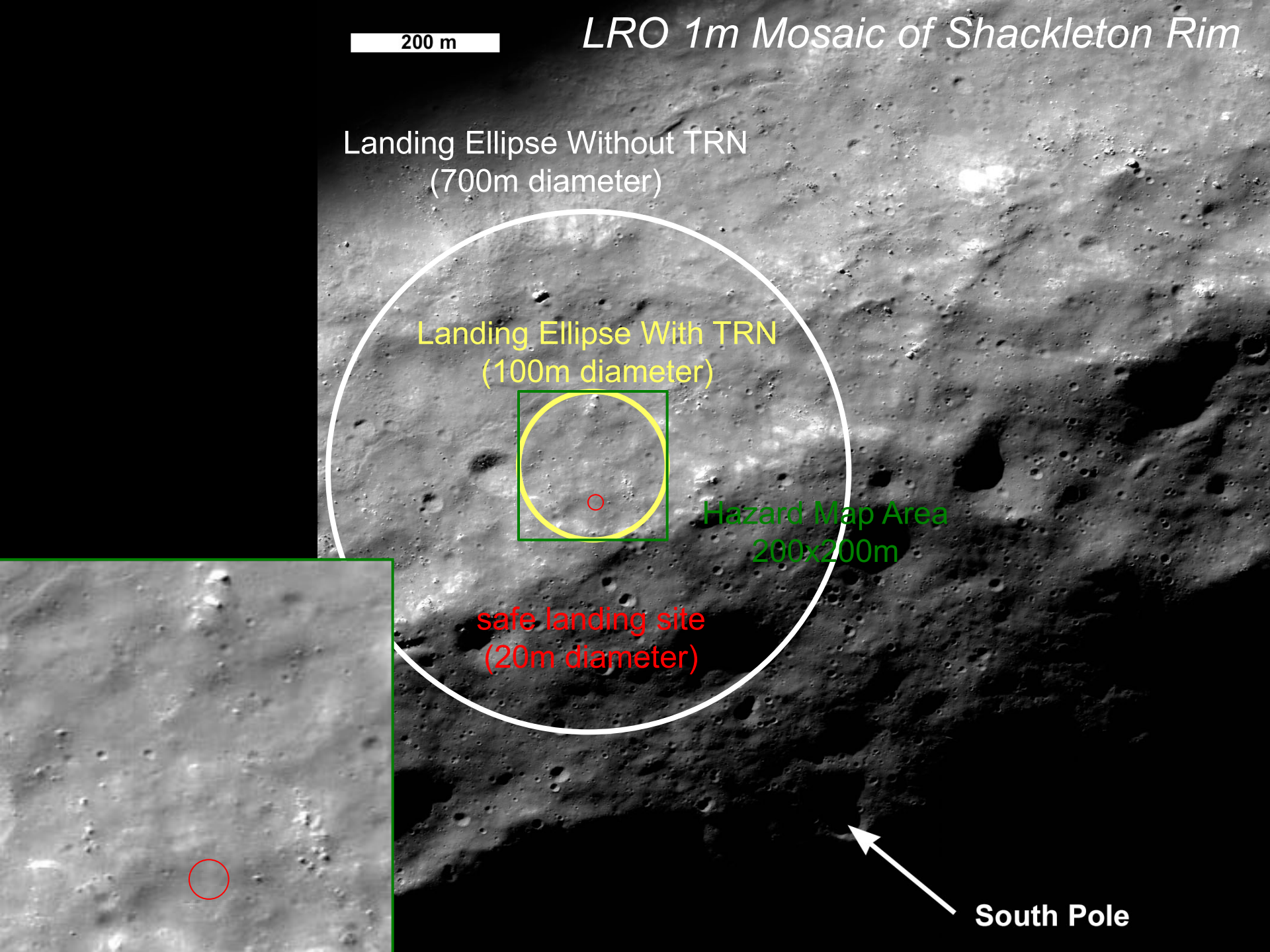
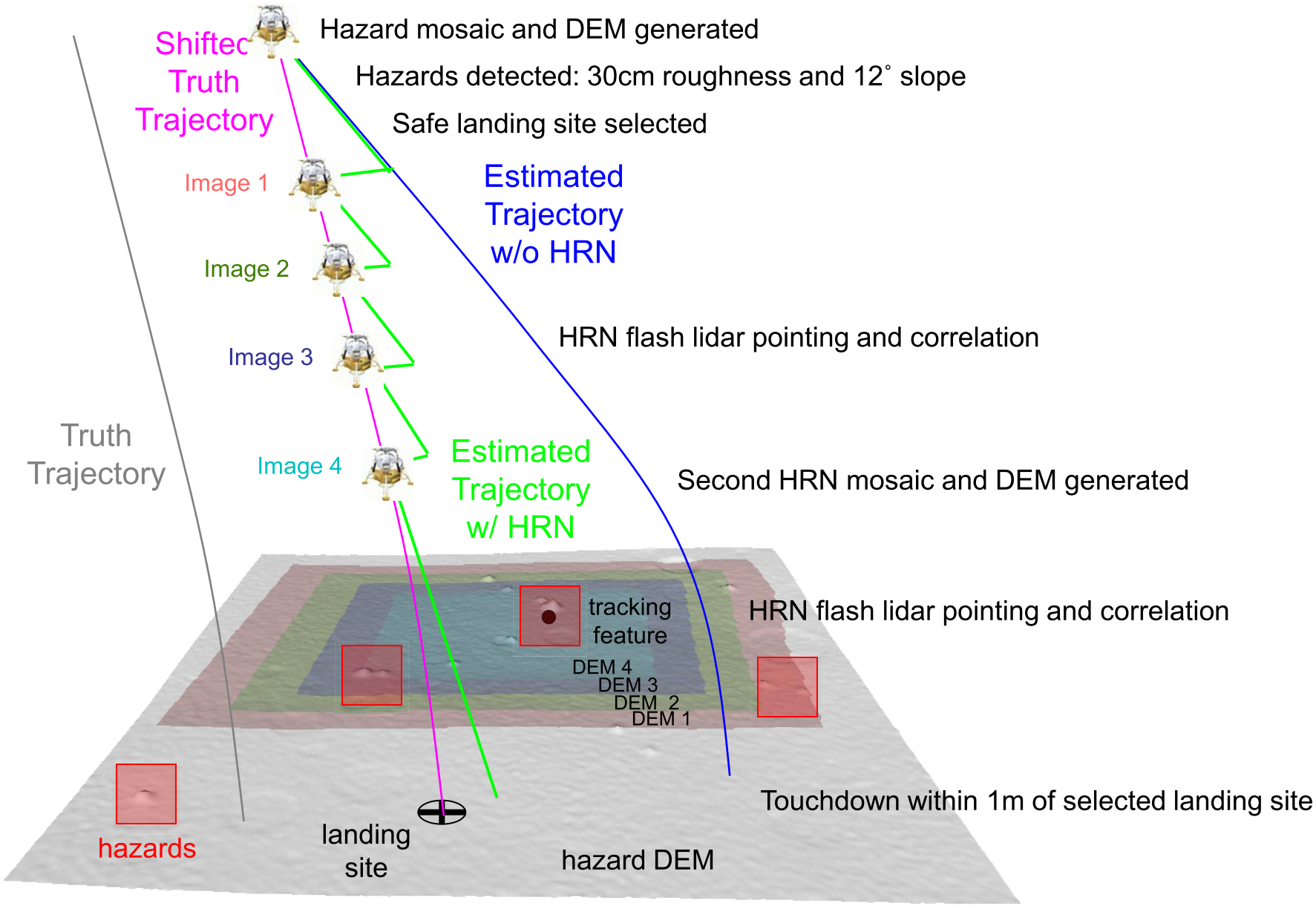
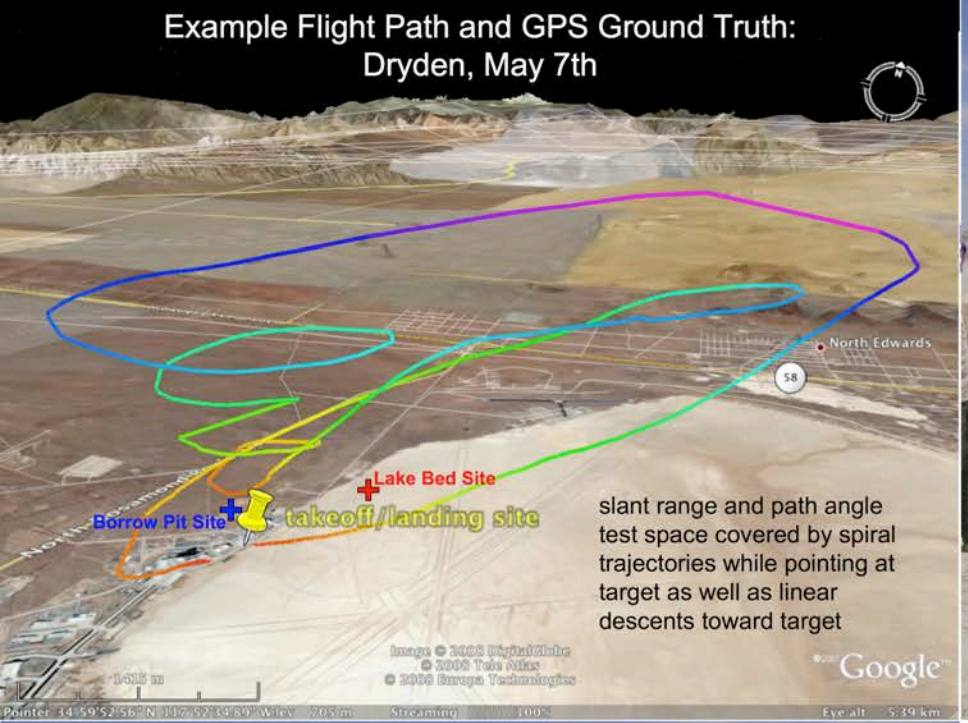

200 m
LRO 1m Mosaic of Shackleton Rim
Landing Ellipse Without TRN
(700m diameter)
Landing Ellipse With TRN
(100m diameter)
Hazard Map Area
200x200m
safe landing site
(20m diameter)
South Pole

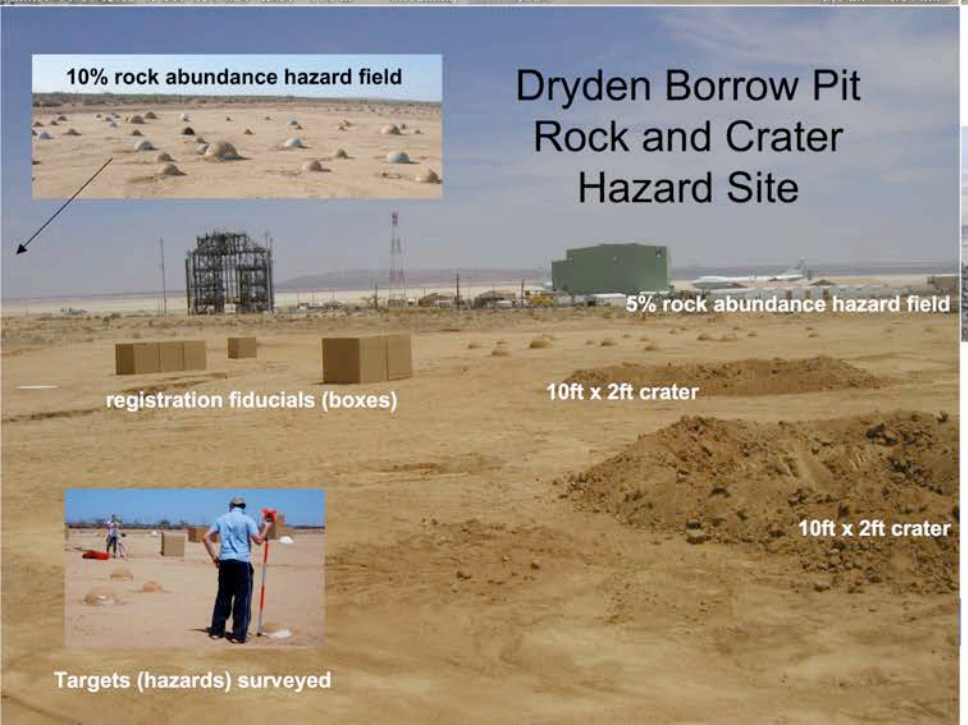
Approach Phase Concept of Operations

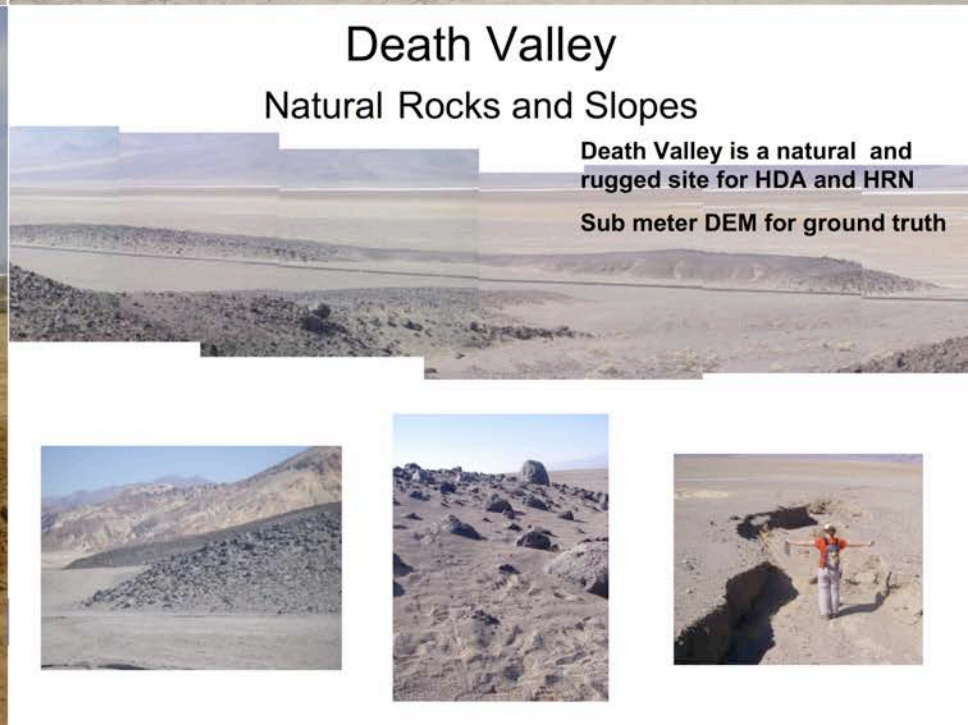


Approach Phase Movie

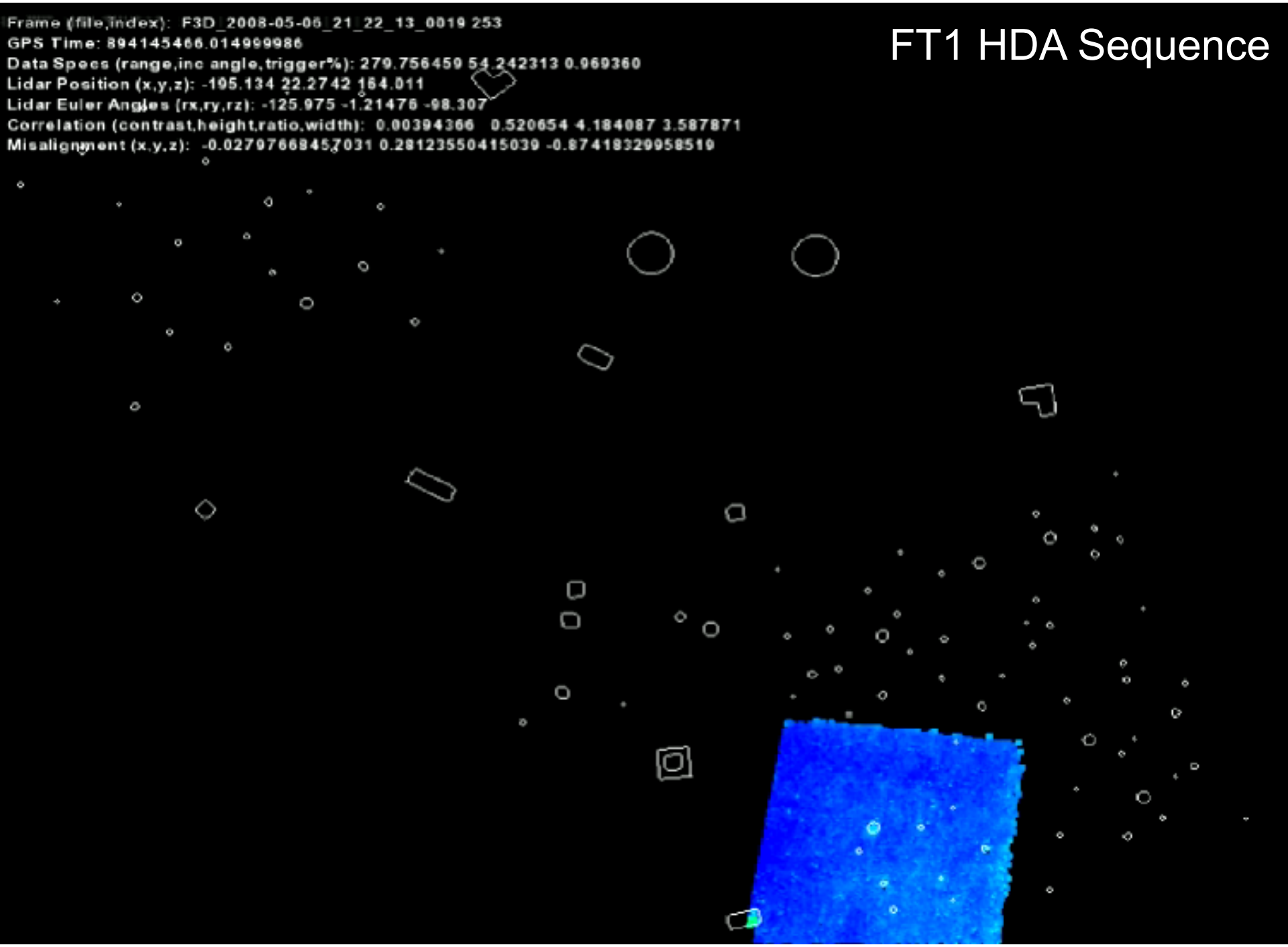

Example Flight Path and GPS Ground Truth:
Dryden, May 7th
North Edwards
58
Lake Bed Site
Borrow Pit Site
takeoff/landing site
slant range and path angle test space covered by spiral trajectories while pointing at target as well as linear descents toward target
Google

Dryden Lake Bed
Lidar Calibration Site
Hemispheres and boxes of known shape
Hemispheres of known reflectivity
flat lakebed

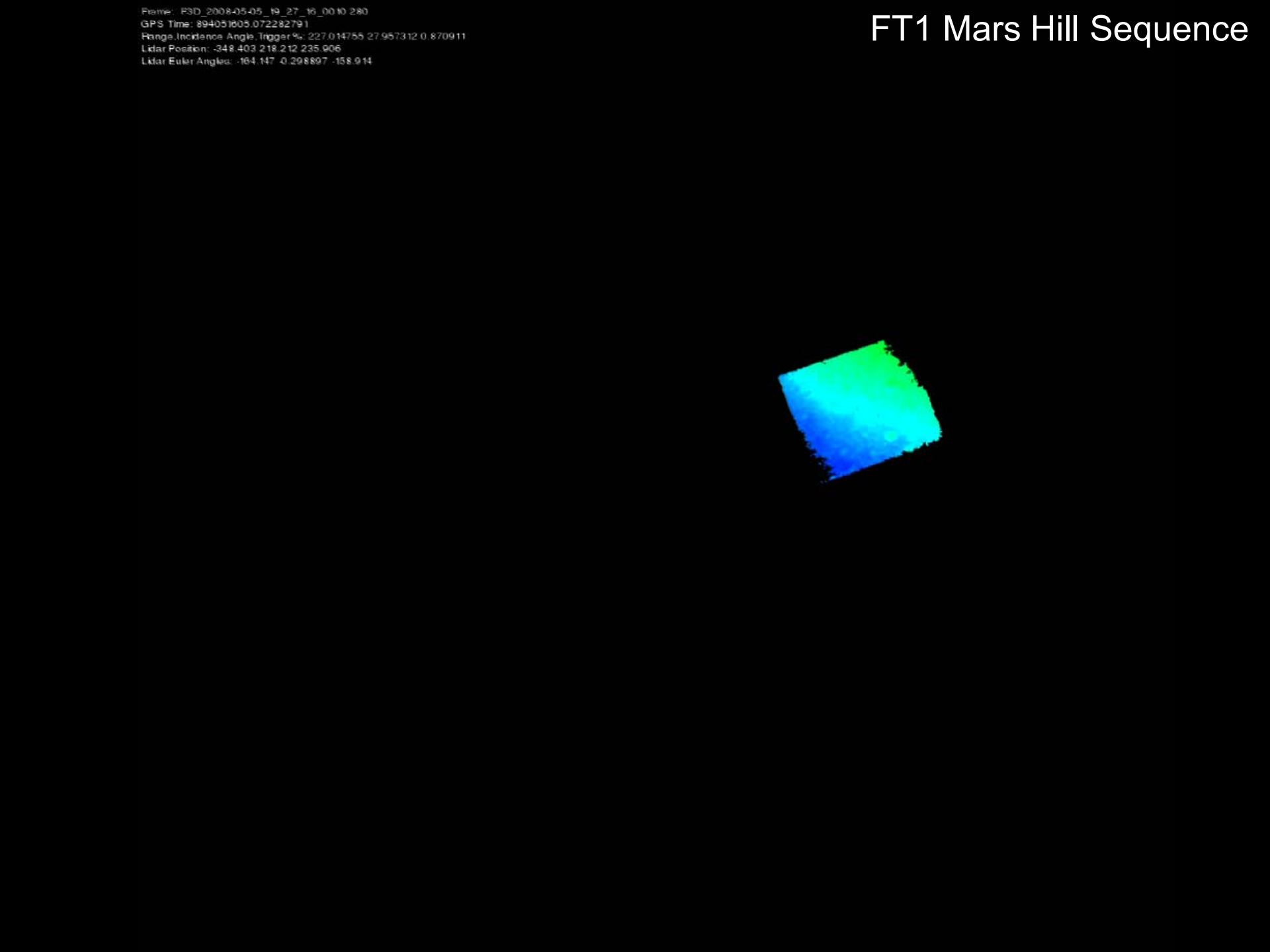

10% rock abundance hazard field
Dryden Borrow Pit
Rock and Crater
Hazard Site
5% rock abundance hazard field
registration fiducials (boxes)
10ft x 2ft crater
10ft x 2ft crater
Targets (hazards) surveyed


Death Valley
Natural Rocks and Slopes
Death Valley is a natural and rugged site for HDA and HRN
Sub meter DEM for ground truth

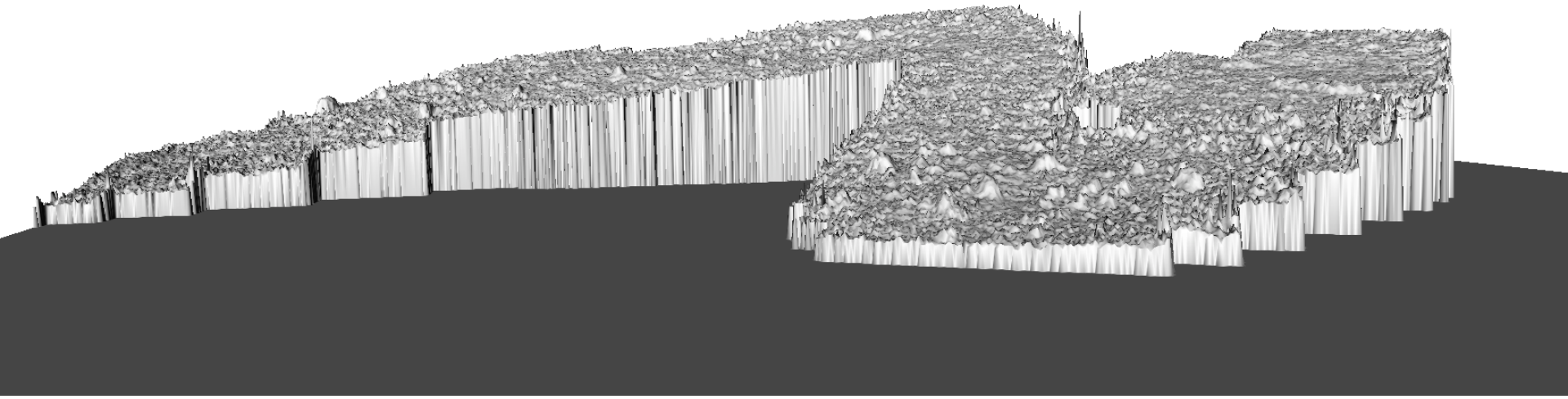
FT1 HDA Sequence



FT1 Mars Hill Sequence



FT1 Mars Hill DEM



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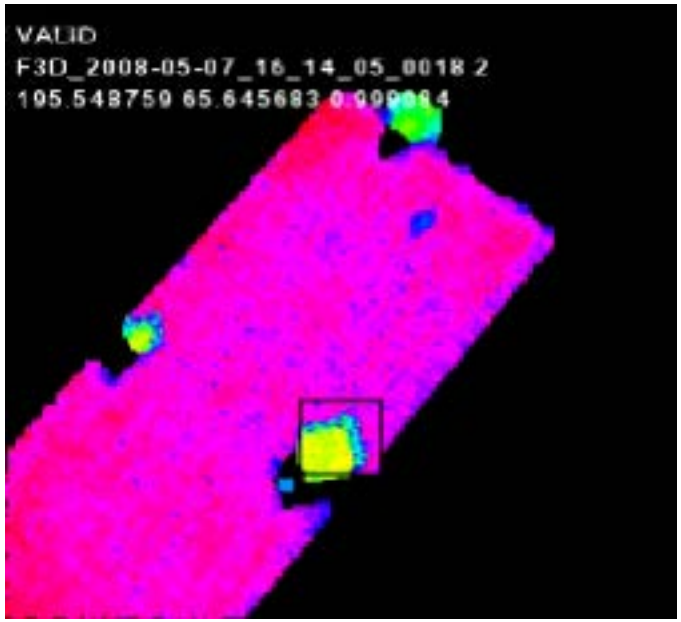
FT1 Example HRN Result Sequence

Selected Features

Tracked Location



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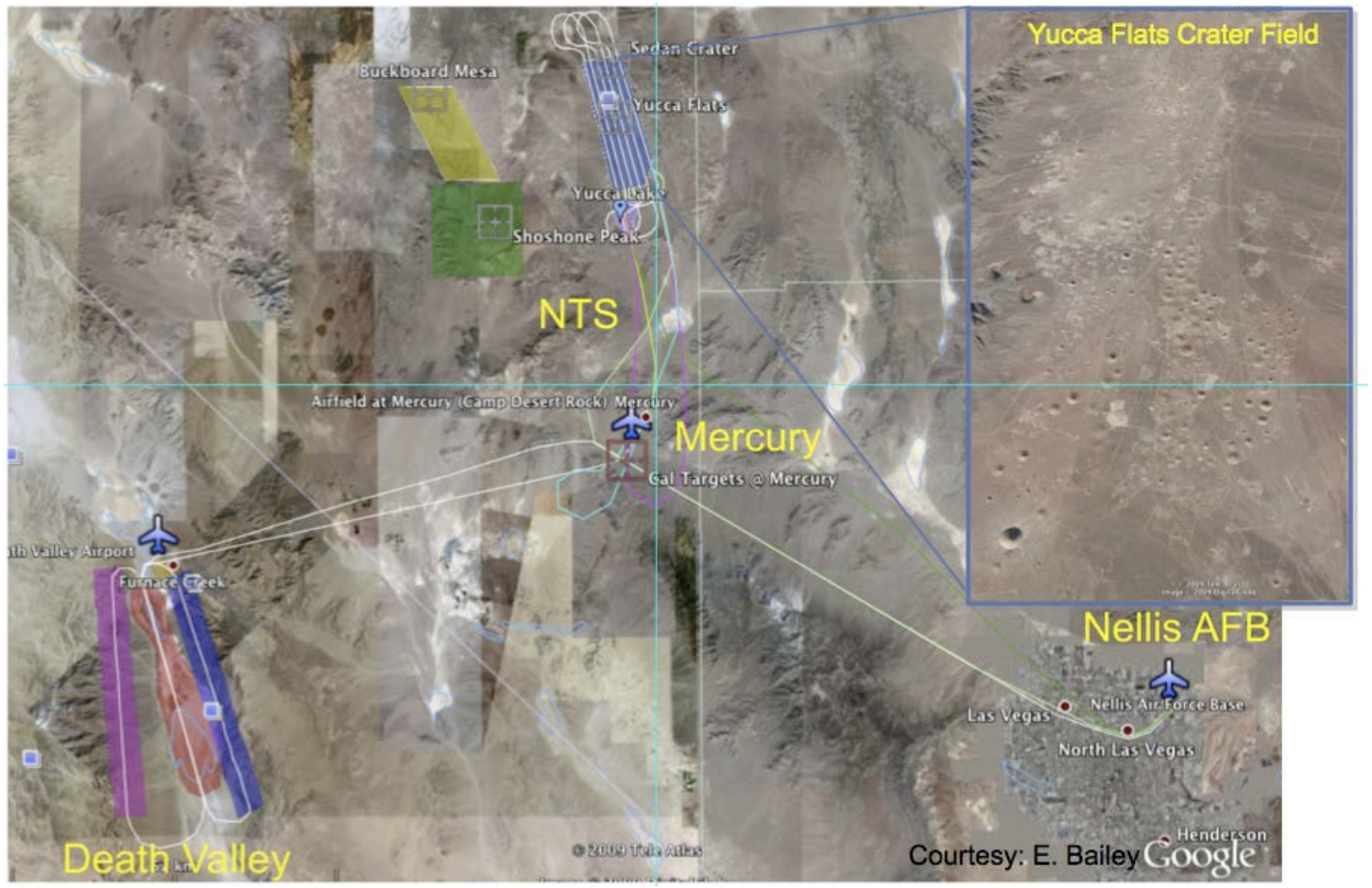
FT3 Field Test Sites



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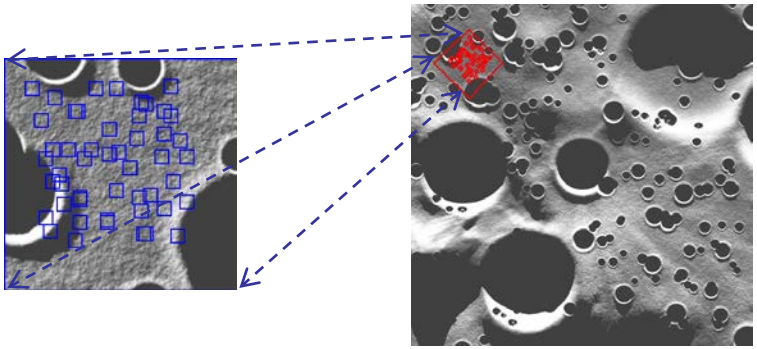
FT3 Passive Optical TRN Algorithms Tested

MAIA - Johnson, ST9

descent image

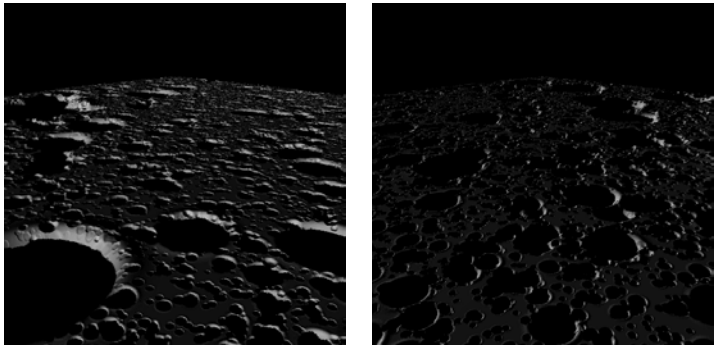
match location



APLNav – APL, DSMACS

left view

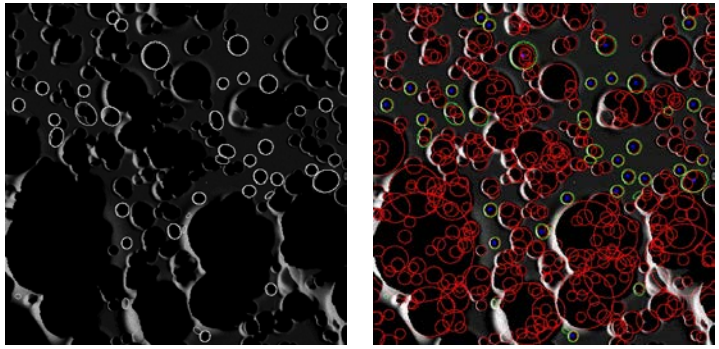
right view



Crater Matching - Cheng, MTP

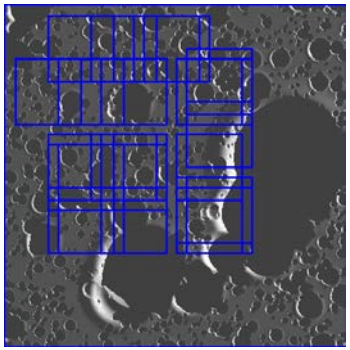
detected craters

matched craters

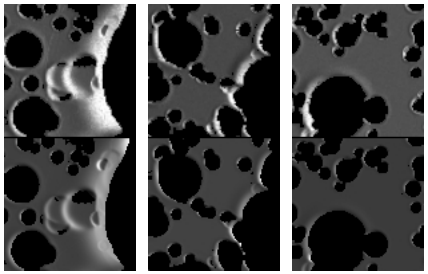


OBIRON - Gaskell, Hayabusa

landmark locations



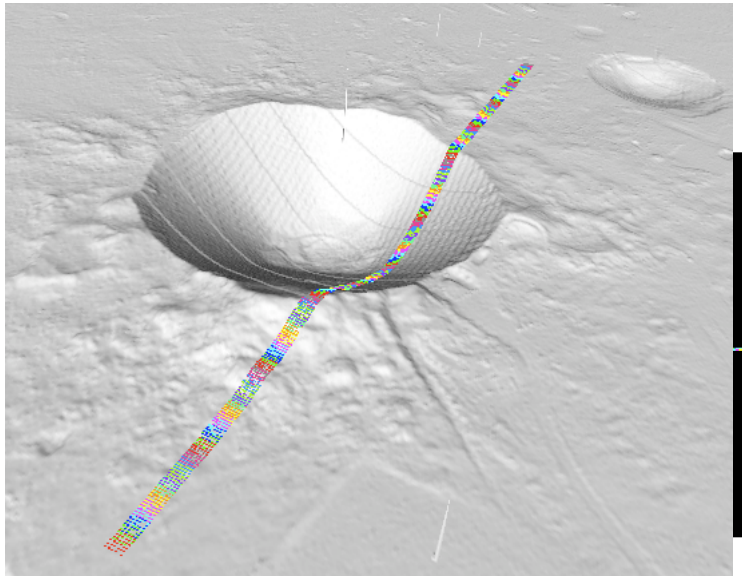
descent image patch



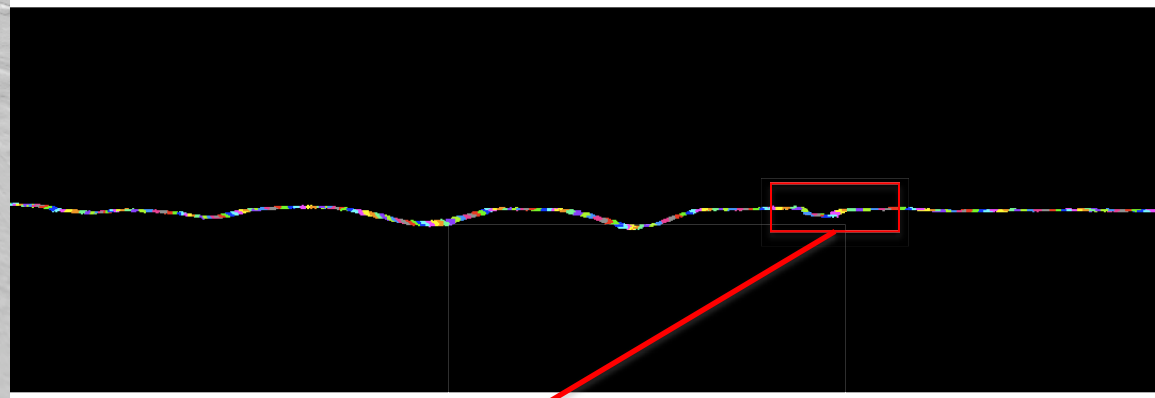
rendered landmark

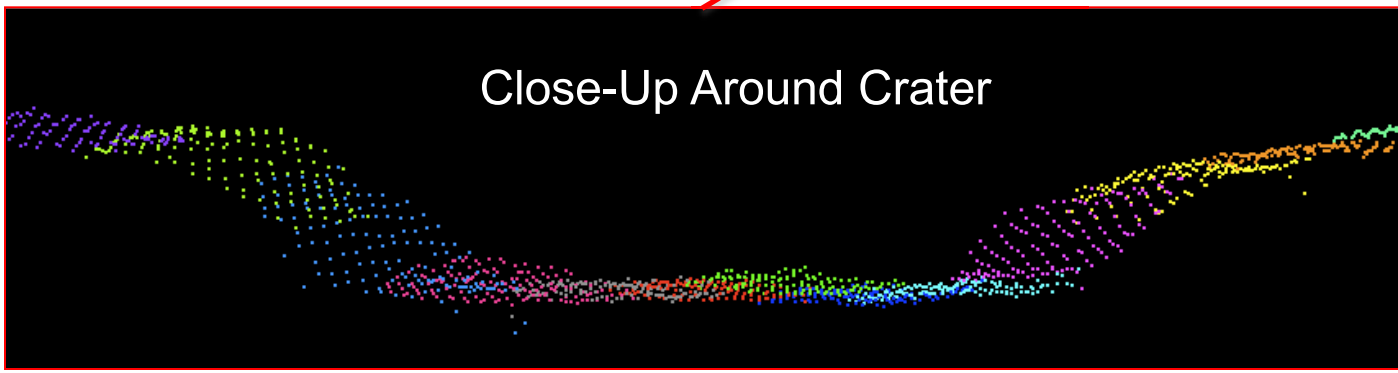
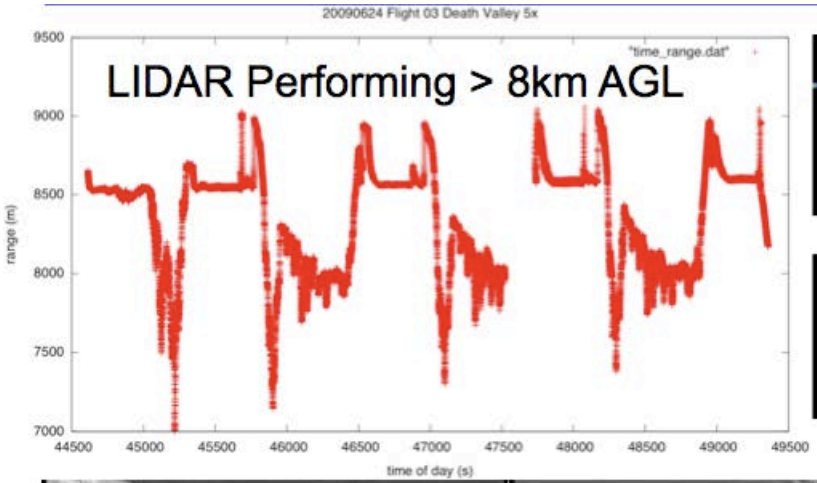
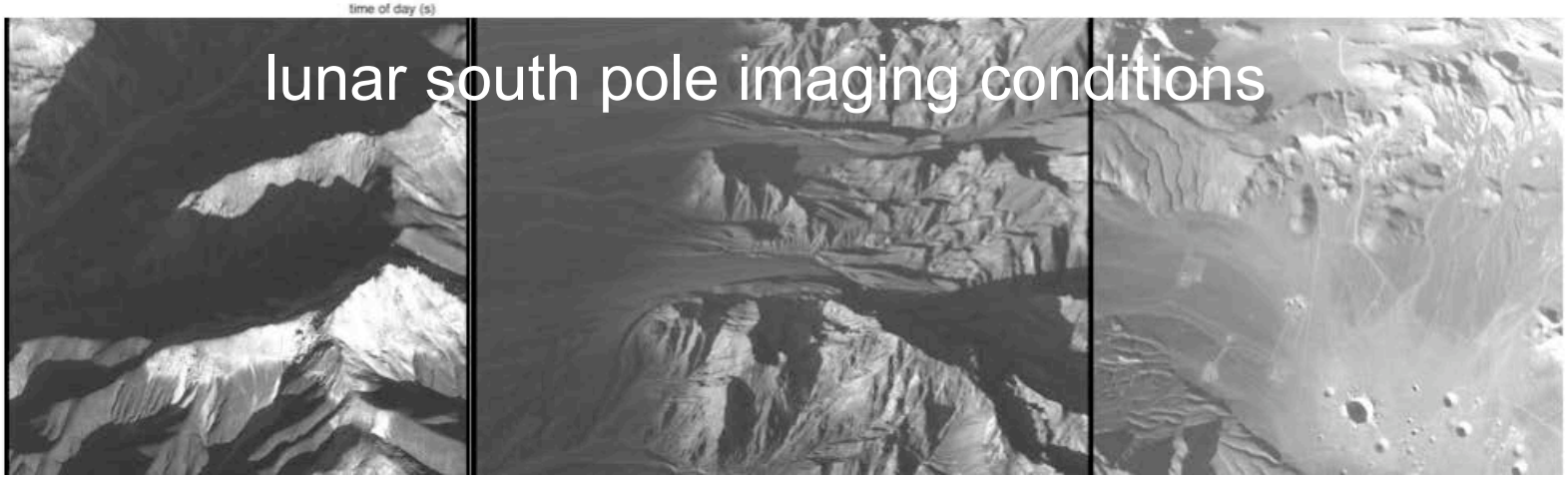
FT3 Lidar TRN Algorithms Tested

Simulation of Lidar-Based Terrain Contour Matching



Lidar Data Contour from FT3





FT3 Example Data