

Soil Moisture
Active Passive
Mission

SMAP

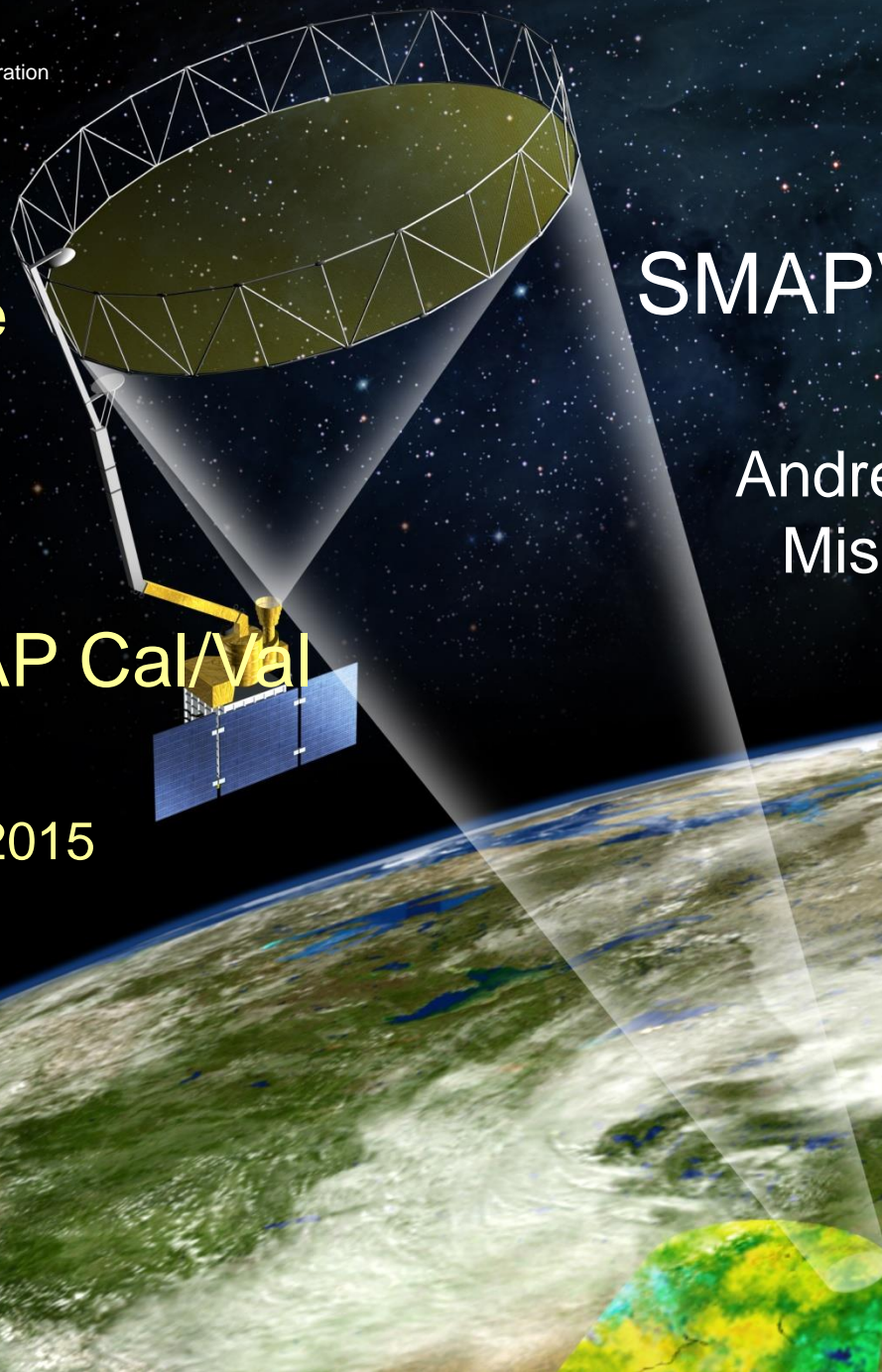
The 6th SMAP Cal/Val
Workshop

September 1-3, 2015

Columbia, MD

SMAPVEX15: PALS

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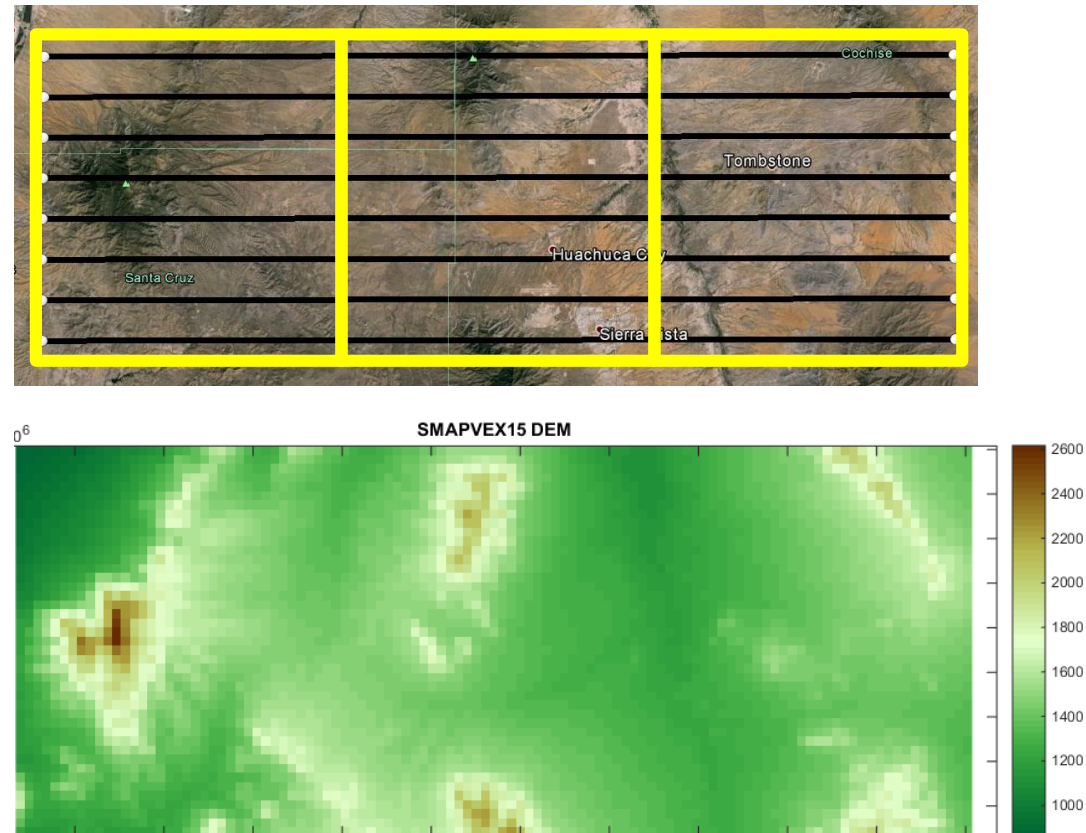


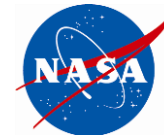


Summary of PALS Acquisitions

General

- Three SMAP 36-km pixels covered at flight altitude of 2.3 km with scanning operation
- Flight lines flown from south to north to clear the military airspace as early as possible
- Default calibration coefficients and elementary azimuth correction applied; DEM accounted for in the geolocation
- Fore and aft portions of the scan both separated and combined





Summary of PALS Acquisitions

PALS flight #1, 8/2

- Start time of the first line: approx. 4:55 AM
- End time of the last line: approx. 8:20 AM

PALS flight #2, 8/5

- Start time of the first line: approx. 3:55 AM
- End time of the last line: approx. 7:35 AM
- Line number #3 re-flown (computer crash)
- Scan rate lower than nominal for the first 5 lines (however, does not prevent the mapping)

PALS flight #3, 8/8

- Start time of the first line: approx. 3:55 AM
- End time of the last line: approx. 7:25 AM
- Some clouds and RFI

PALS flight #4, 8/10

- Start time of the first line: approx. 3:55 AM
- End time of the last line: approx. 7:25 AM

PALS flight #5, 8/13

- Start time of the first line: approx. 4:05 AM
- End time of the last line: approx. 7:45 AM
- Redone part of line #2

PALS flight #6, 8/16

- Start time of the first line: approx. 3:35 AM
- End time of the last line: approx. 8:05 AM
- Redone part of line #3 and line #4

PALS flight #7, 8/18

- Start time of the first line: approx. 5:20 AM
- End time of the last line: approx. 9:15 AM
- Aircraft maintenance issue delayed take-off
- Altitude 12000 ft (as opposed to 11500 ft) as instructed by air traffic control
- Redone part of line #1

Lake Overpass, 8/14

- One time lake calibration to support the pre- and post-flight ground calibration scheme



Summary of PALS Acquisitions

Some observations

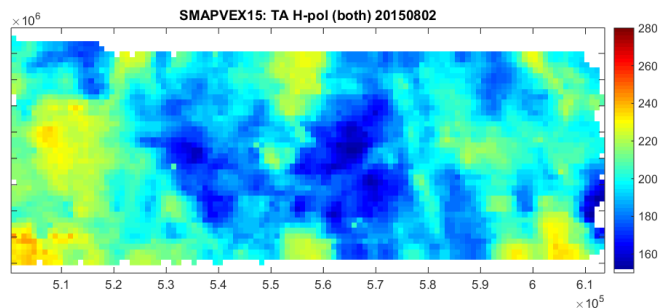
- In general, first day results show significant TA variations across the domain as expected based on the precipitation activity preceding the first flight. The patterns also match the topography (the last chart).
- There was very little rain between the first and the second day which resulted in drying of the domain and significantly higher TA
- Third flight shows the wetting of the soil around the middle of the area
- Fourth, fifth and sixth flights show varying wetting patterns
- No distinctive wet patterns were observed on the seventh and final day
- TIR measured from DC-3 was around 15-25 C most of the time during the first 6 measurements. Some heating is observed towards the end of the measurements which is expected. (The northwestern corner seems to be warmer than the rest of the area too.) During the last measurements TIR values increased significantly towards the end due to the delayed take-off.



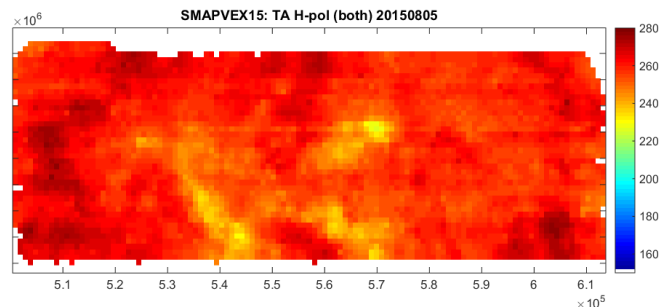
H-pol

Day

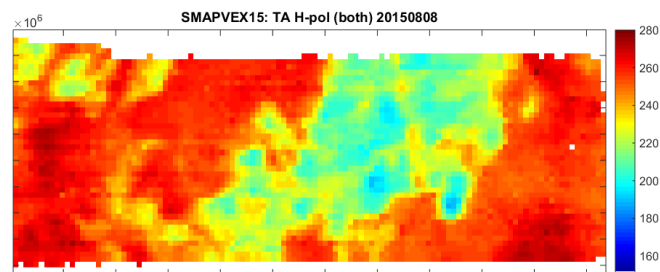
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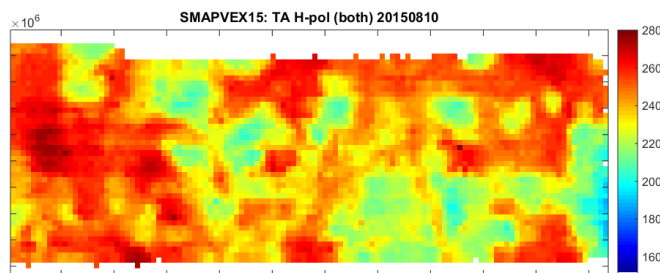
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3

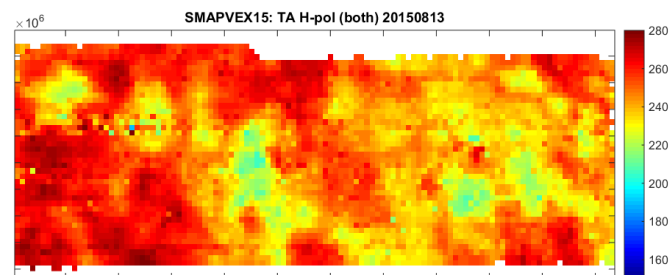


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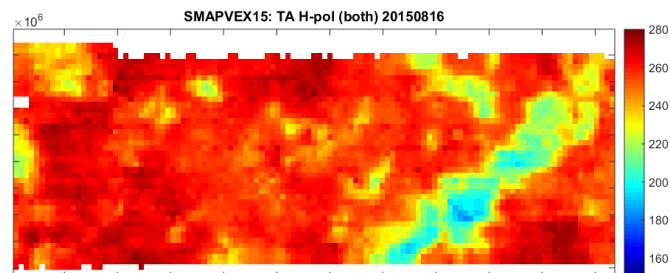


Day

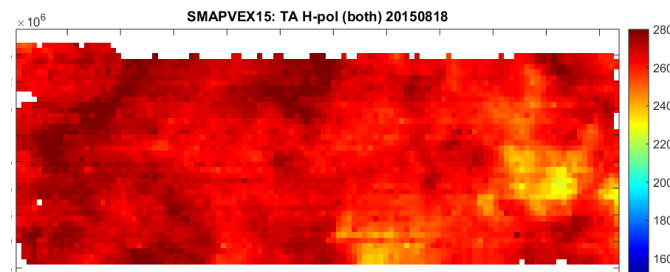
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6



7

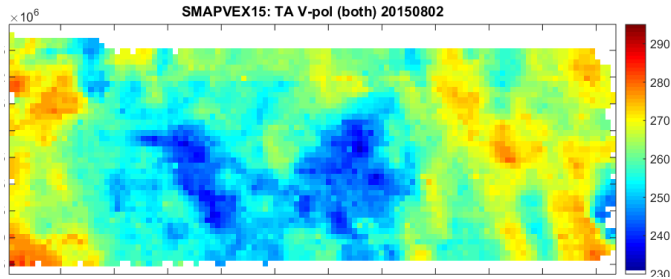




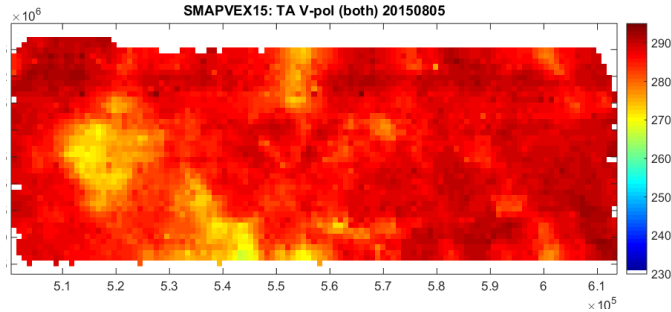
V-pol

Day

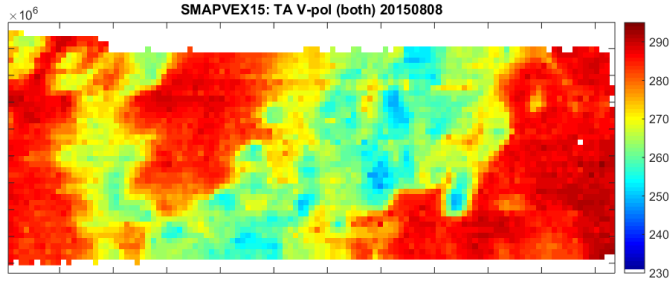
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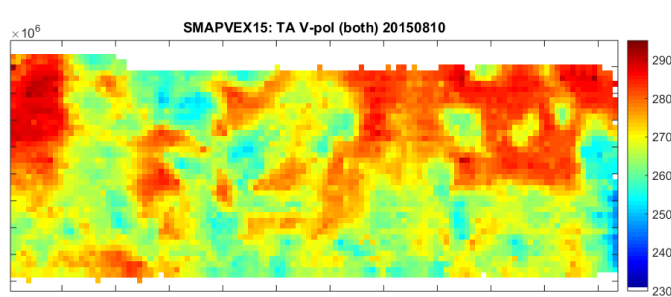
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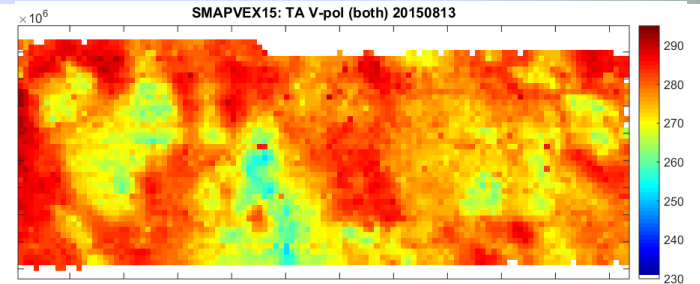


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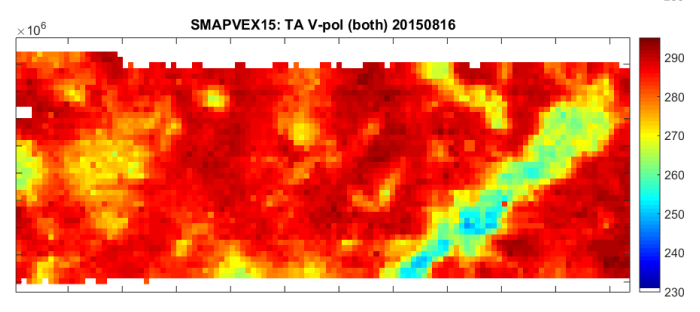


Day

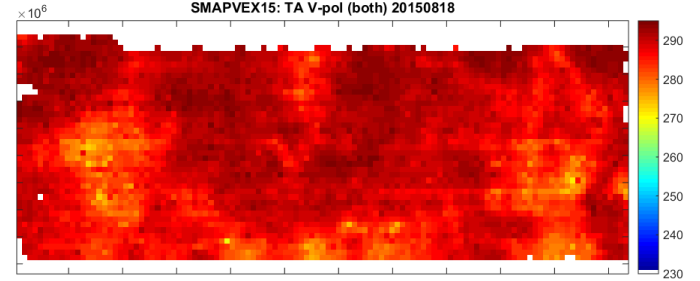
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7

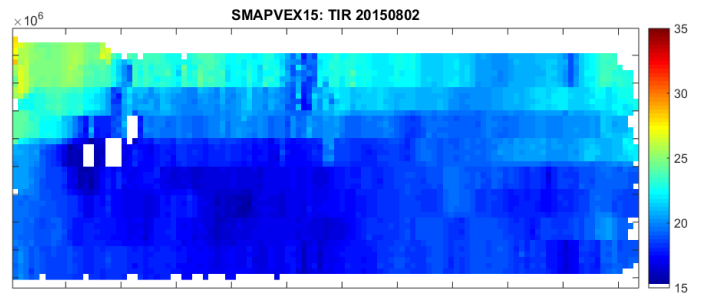




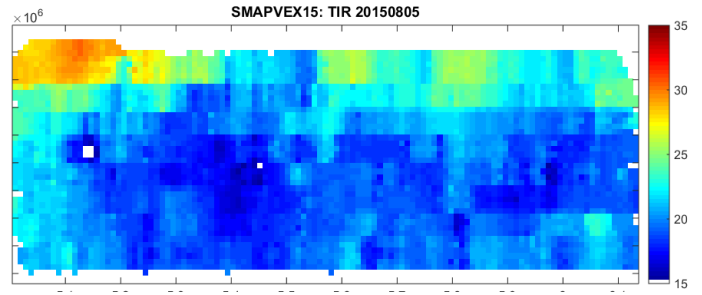
Thermal IR from DC-3

Day

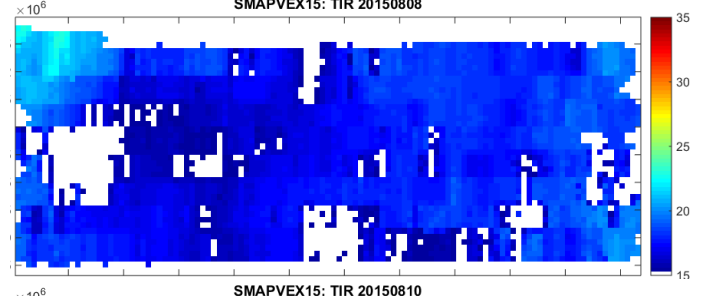
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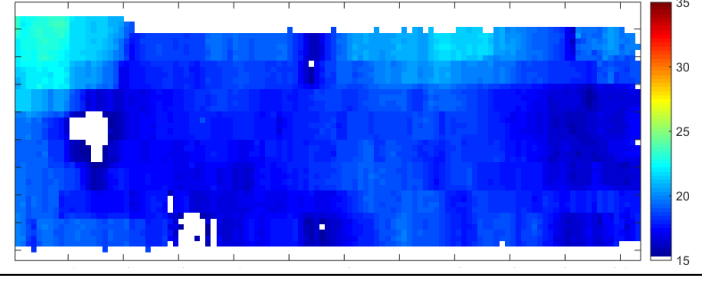
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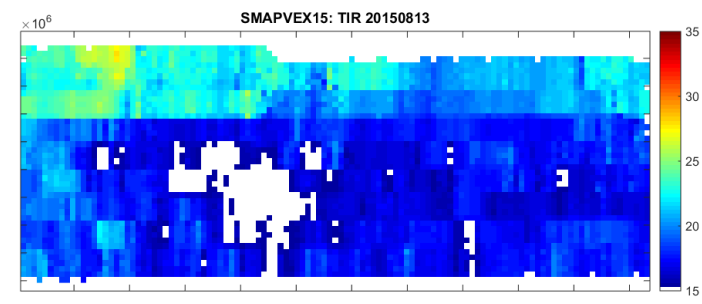


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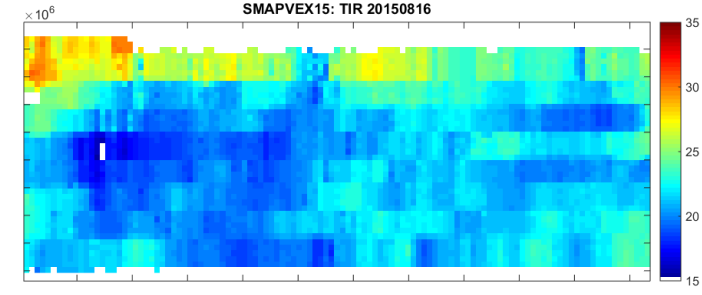


Day

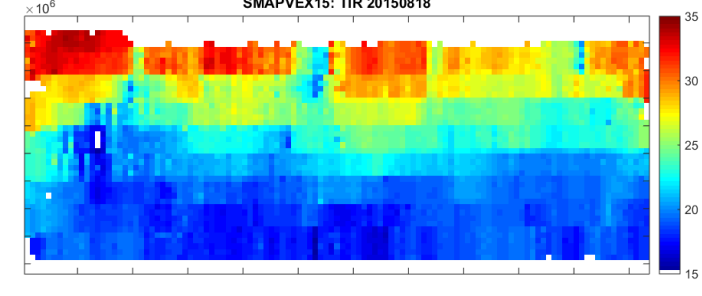
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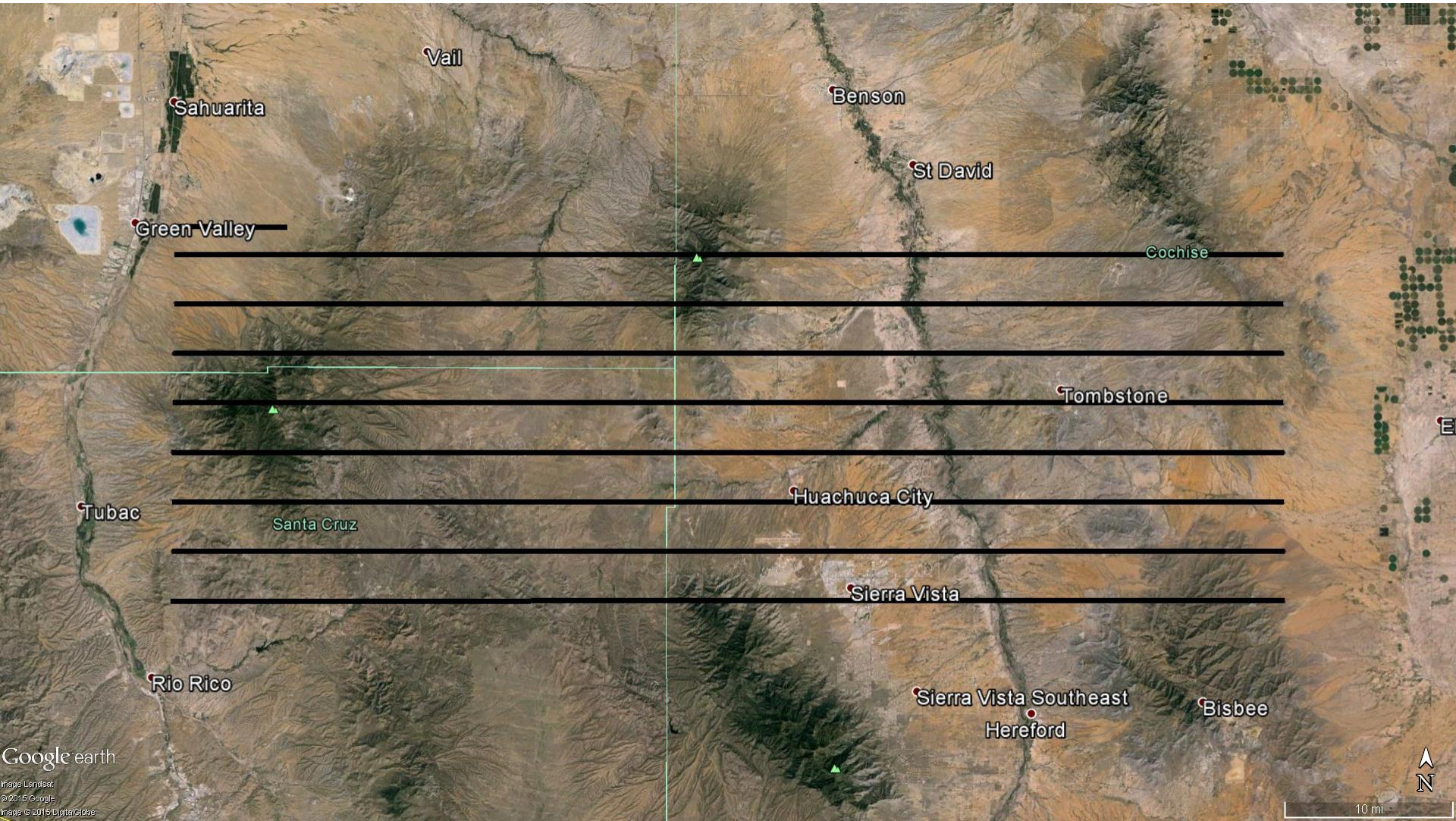


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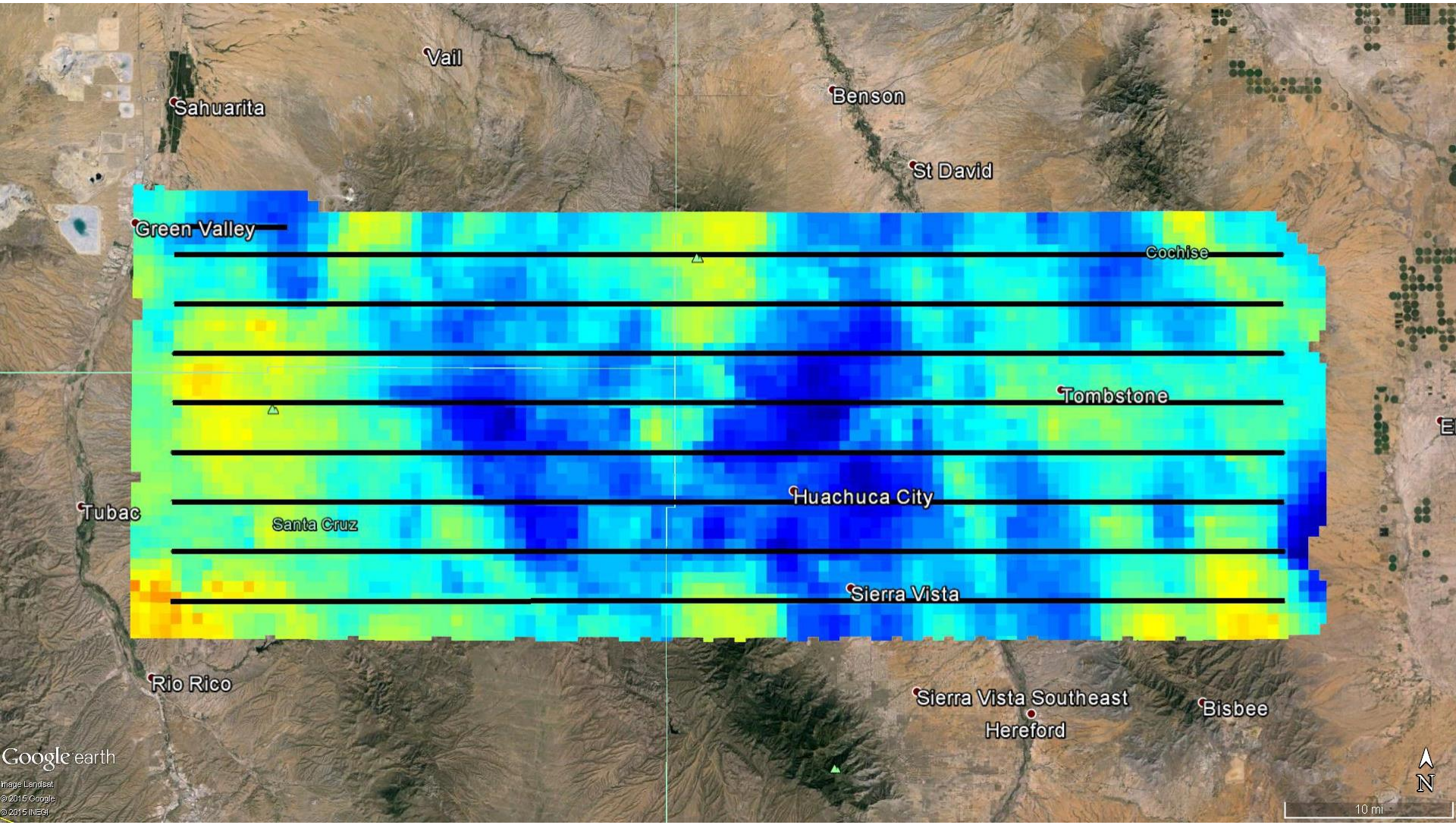


Lines





Day 1





Day 4

