

GREENLAND'S ICE SHEET MELTING

SUE KONKOL

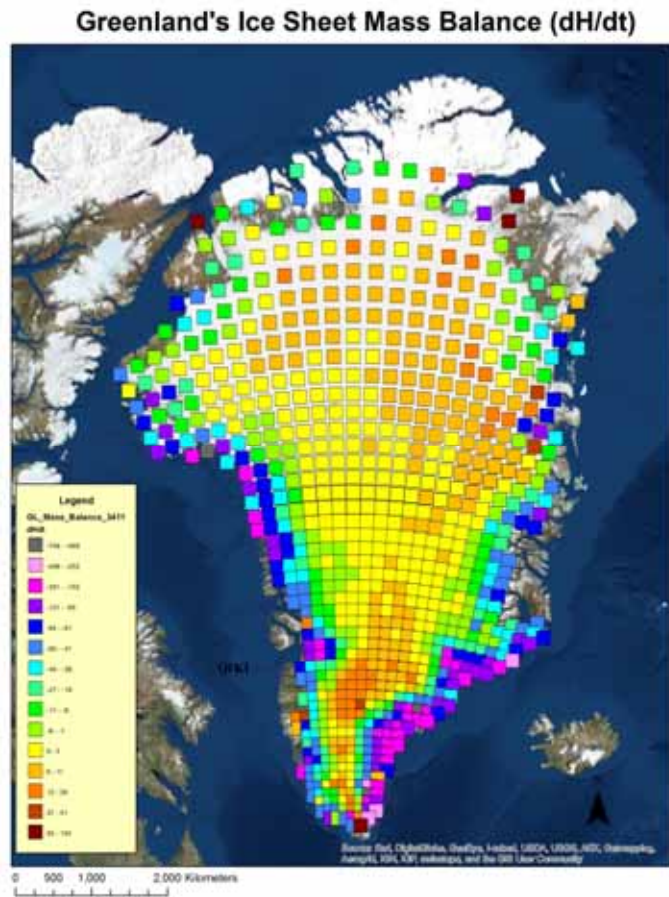


**1. Will Greenland's Elevation
increase or decrease with the
loss of its ice?**

**2. Do the GPS velocities match
the Velocity maps of the same
periods showing direction of ice
movement?**

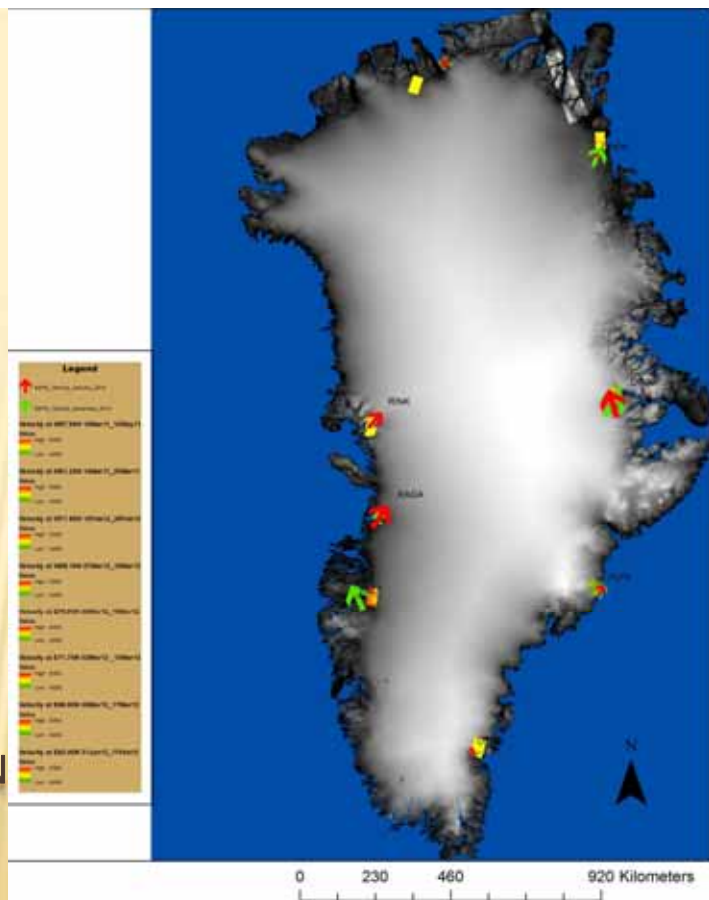
LOSS AND GAIN OF ICE SHEET

Yellow, Orange, Tan, and Brown areas are positive and gaining ice. All of the remaining colors –mostly coastal areas- are losing ice

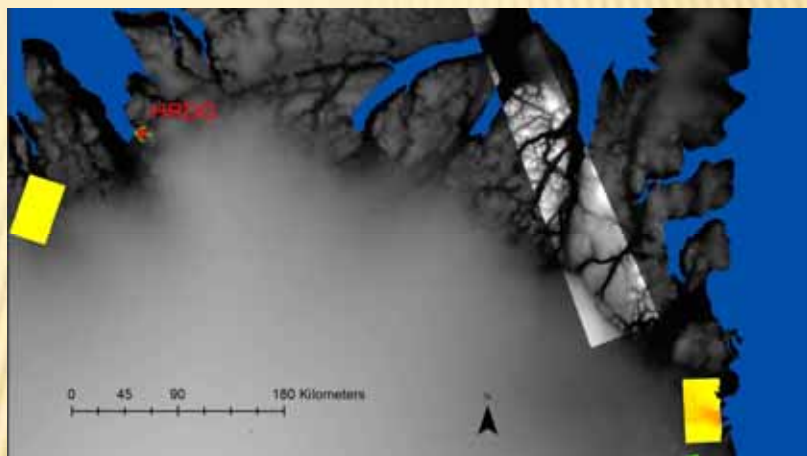


Elevation Model with GPS points and direction. Velocity maps are near the GPS points. The velocity maps give direction of the movement of ice. GPS Stations give direction of continental movement or ice movement.

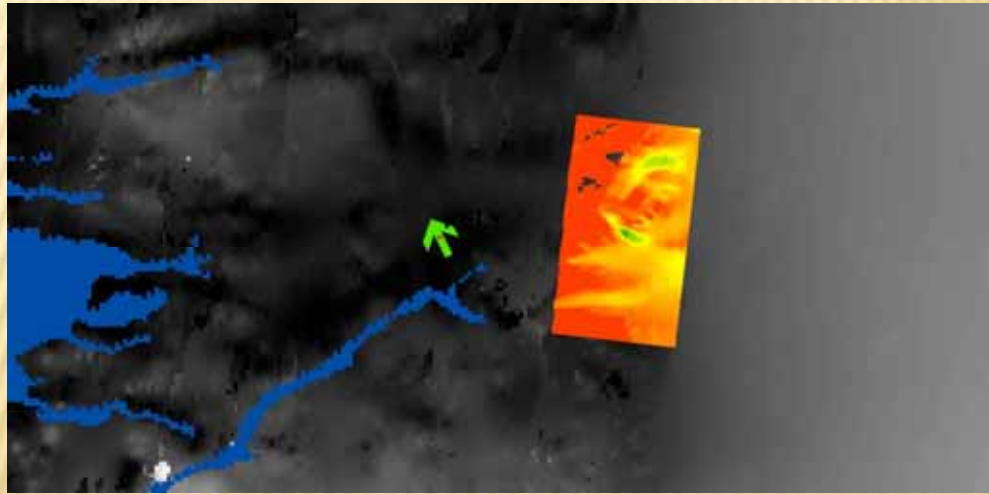
ELEVATION



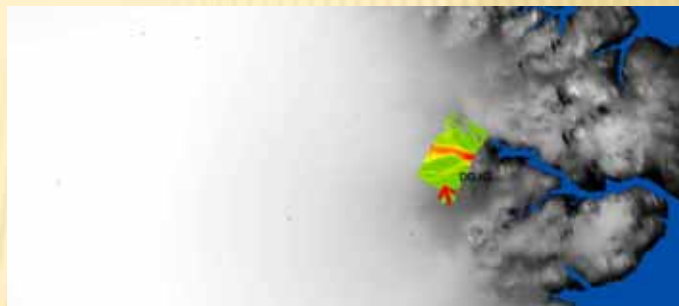
NORTHERN GREENLAND WITH NASA SWATH



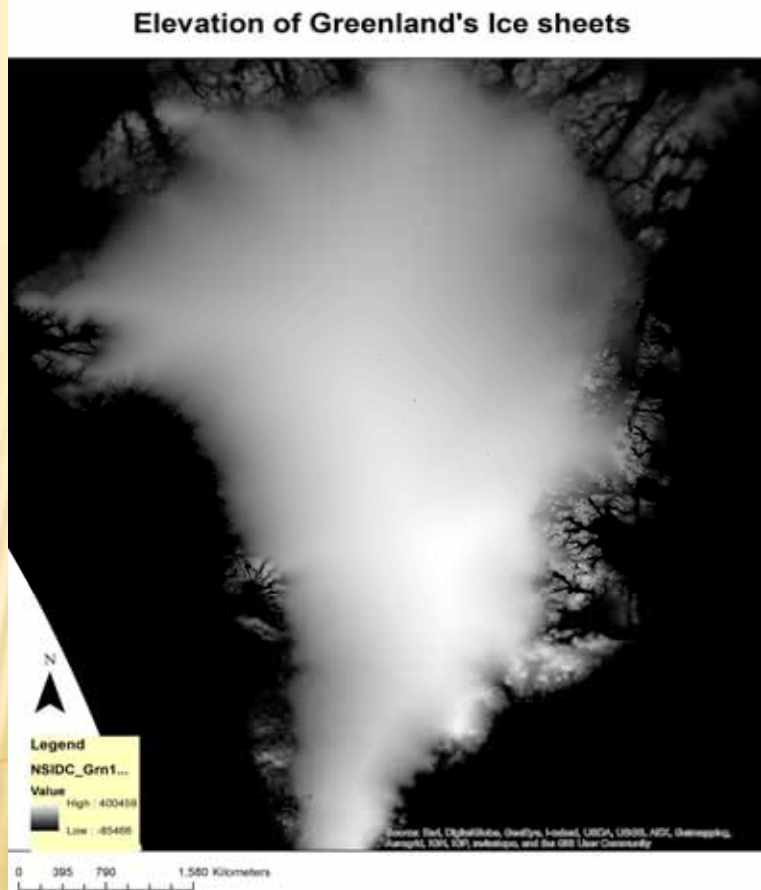
STATION KELY ON WEST CENTRAL COAST



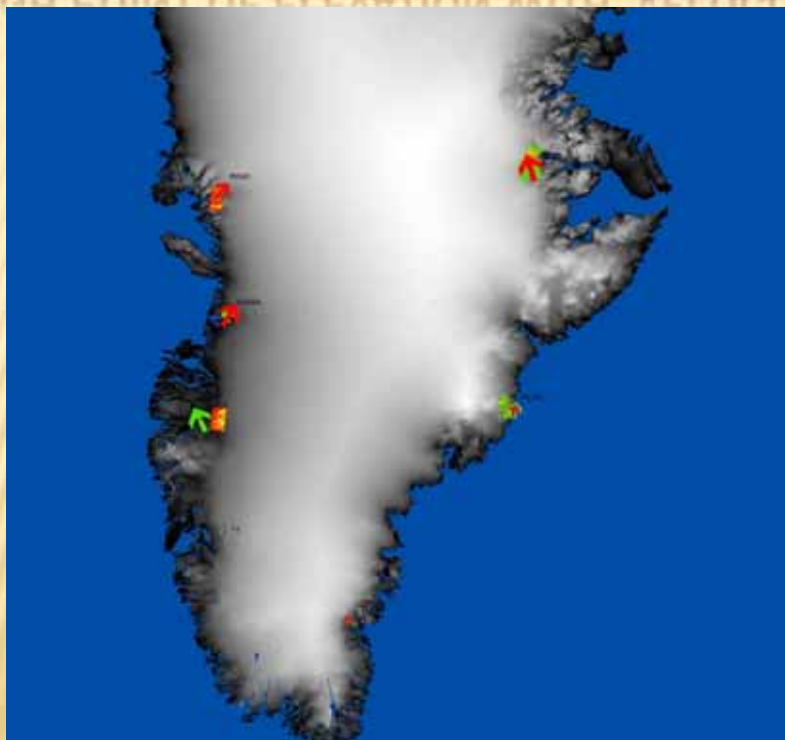
EAST CENTRAL COAST VELOCITY MAP ON THE SIDE OF AN ICE SHELF.



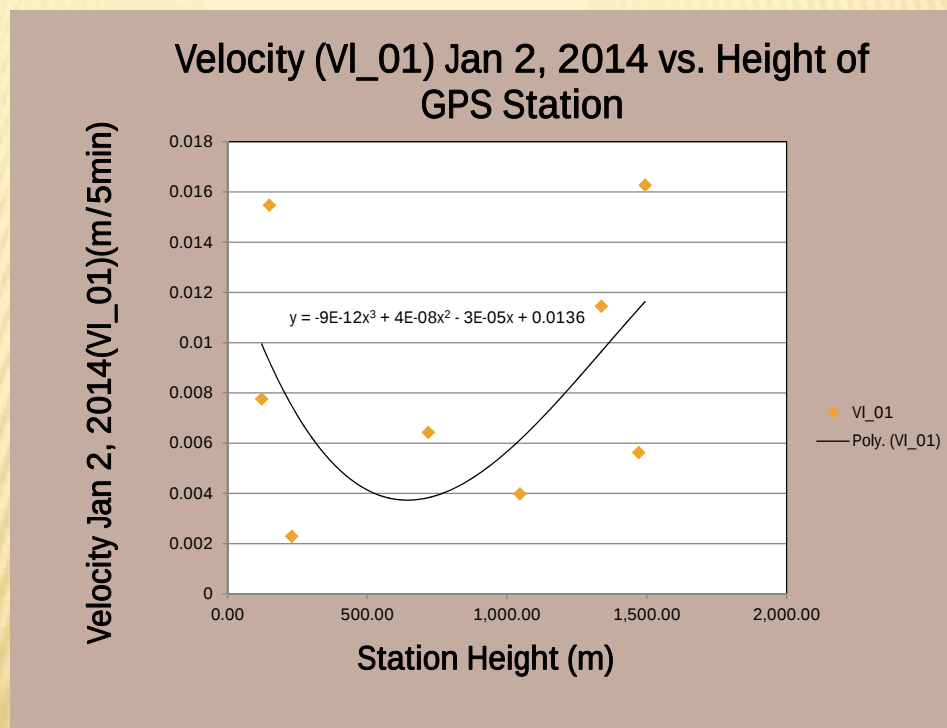
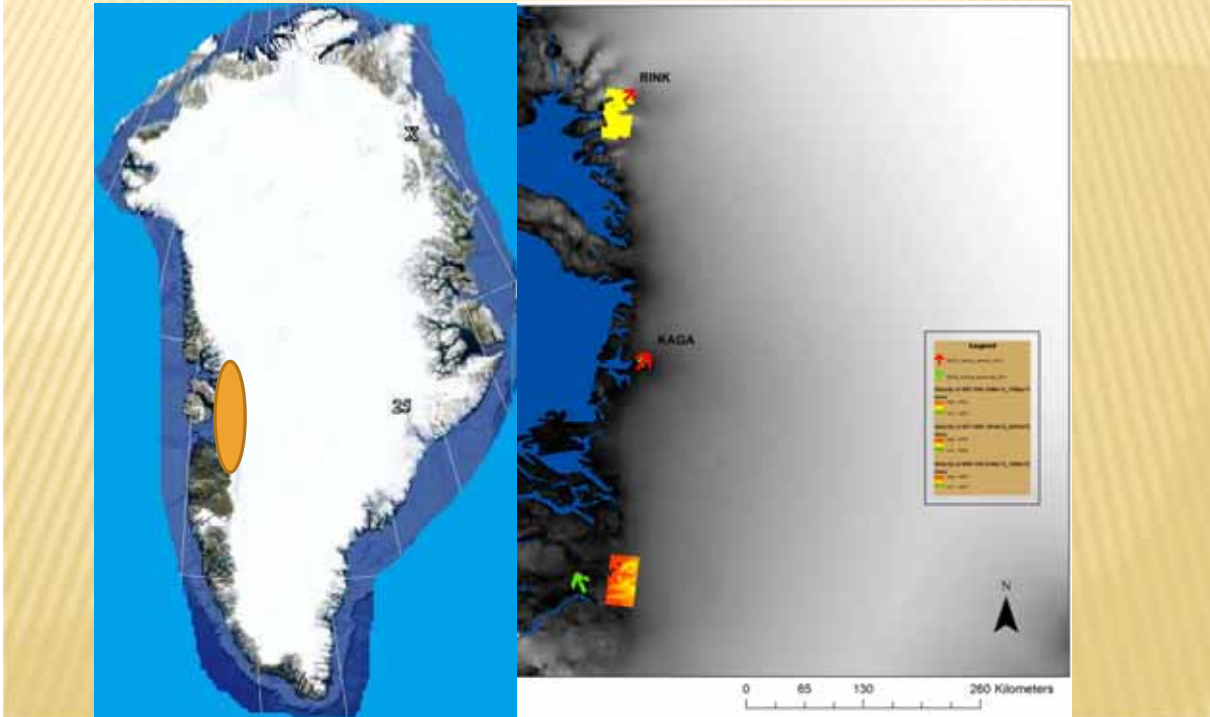
Greenland's
Ice sheet
showing the
high point
area.



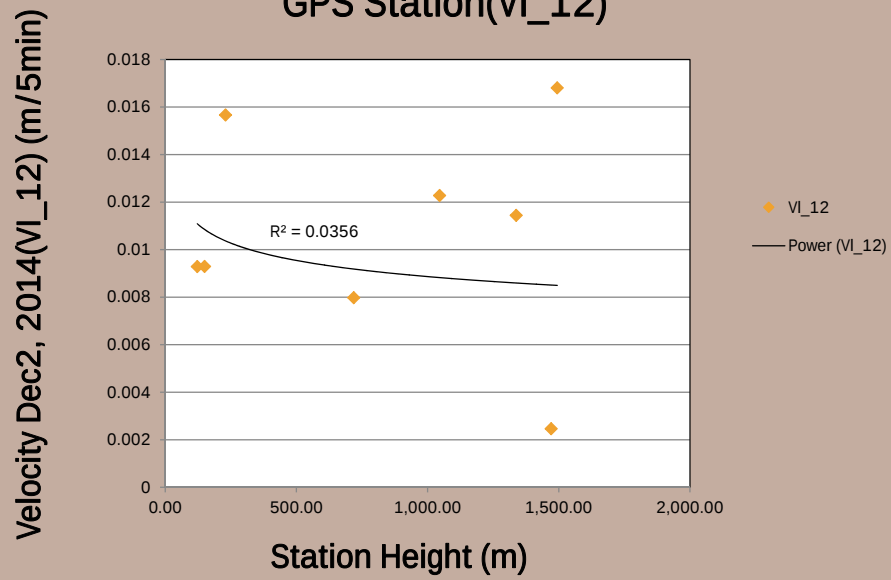
HIGH POINT OF ELEVATION WITH VELOCITIES



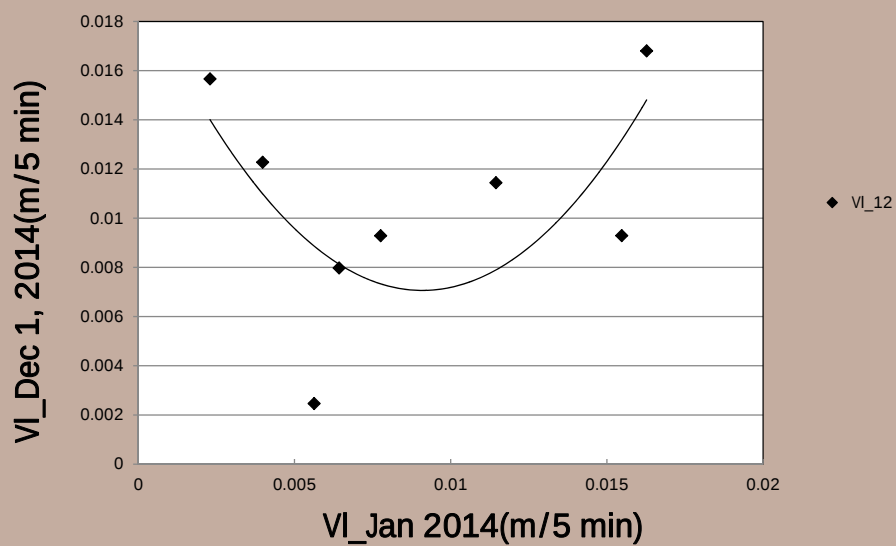
Central Greenland GPS Direction and Velocity maps with Direction for Both Dates



Velocity (VI_01) Dec 1, 2014 vs. Height of GPS Station(VI_12)



Velocity(VI_ Dec)1, 2014 vs.(IV) Jan 2014



1. MASS BALANCE SHOWS GAINING ICE IN INTERIOR BUT LOSING ON EXTERIOR

2. DEM FROM 2007 SHOWS A DIFFERENT HIGH LOCATION THAN THE MASS BALANCE – MAYBE REBOUND

3. MANY OF THE GPS POINTS ARE MOVING NORTH BUT THE VELOCITY MAPS ARE SHOWING A DIFFERENT PATTERN

4. GRAPHS SHOW ERRATIC MOVEMENT OF GPS VELOCITIES VERSES THE VELOCITY MAPS – NEAR COASTAL REGIONS GPS VELOCITIES POINT NORTH; VELOCITY SWATHS POINT RAPID VELOCITIES TOWARD THE WATER FROM THE LAND – MAYBE CONTINENTAL MOVEMENT VS. ICE MOVEMENT.

5. THE QUESTION OF WHETHER THE ELEVATION CHANGE IS RESULTING FROM LOSS OF ICE IS NOT AS CLEAR – ELEVATION IS CHANGING

REFERENCES

Joughin, I., I. Howat, B. Smith, T. Scambos. 2011. *MEaSUREs Greenland Ice Velocity: Selected Glacier Site Velocity Maps from InSAR*. Boulder, Colorado, USA: NASA DAAC at the National Snow and Ice Data Center.

(National Snow and Ice Data Center Archives, 2005 - 2014)doi:10.5067/MEASURES/CRYOSPHERE/nsidc-0481.001. (National Snow and Ice Data Center, 2014)

The GPS data analysis is carried out with the GISPY-OASIS-II software package provided to us by the Jet Propulsion Laboratory, Pasadena, California.