



SuperMAG Activity: Latest and Future Tools

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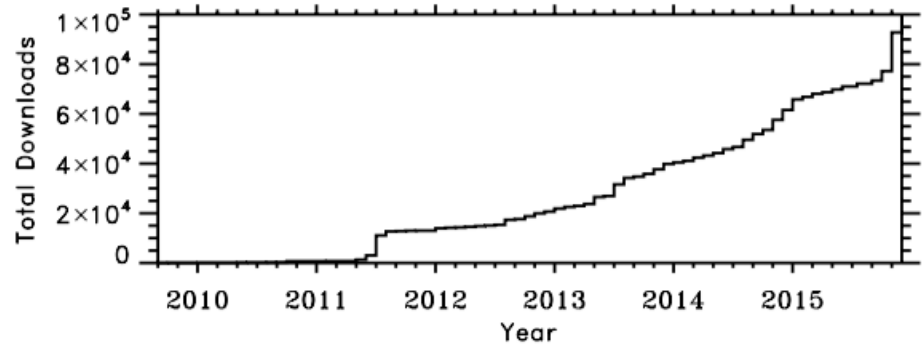
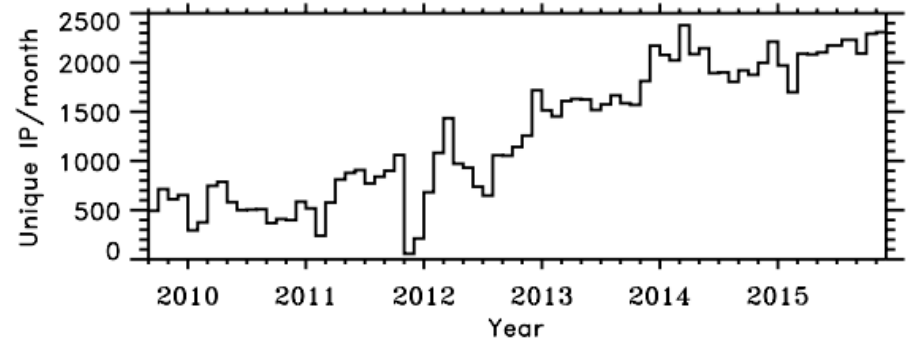
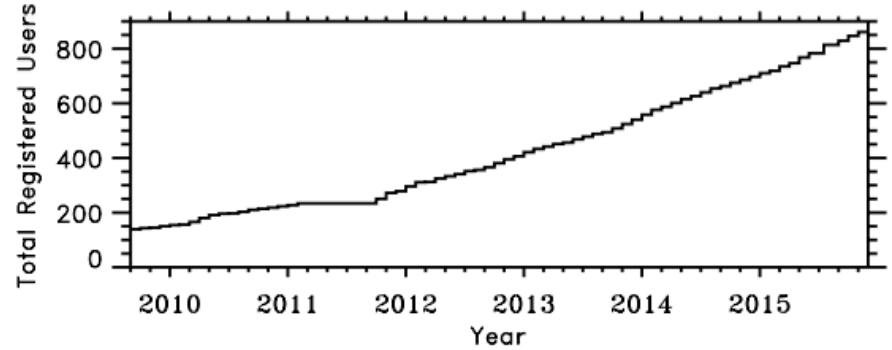
December, 2015



Usage

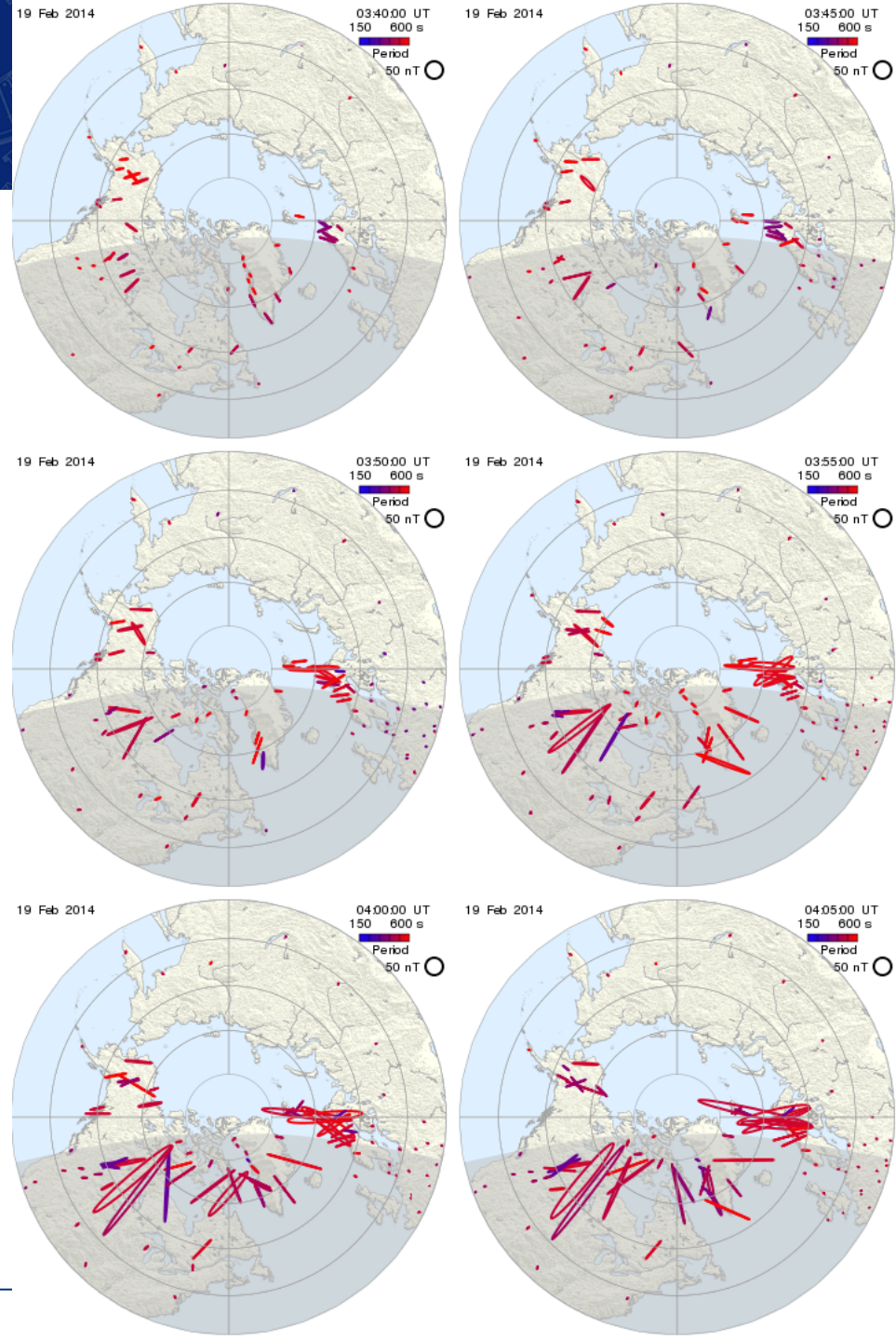
~870 registered users
~35,000 downloads in 2015
~50 peer reviewed papers in 2015

November 2015 new record of >15,000 downloads beating the previous record of ~8000.



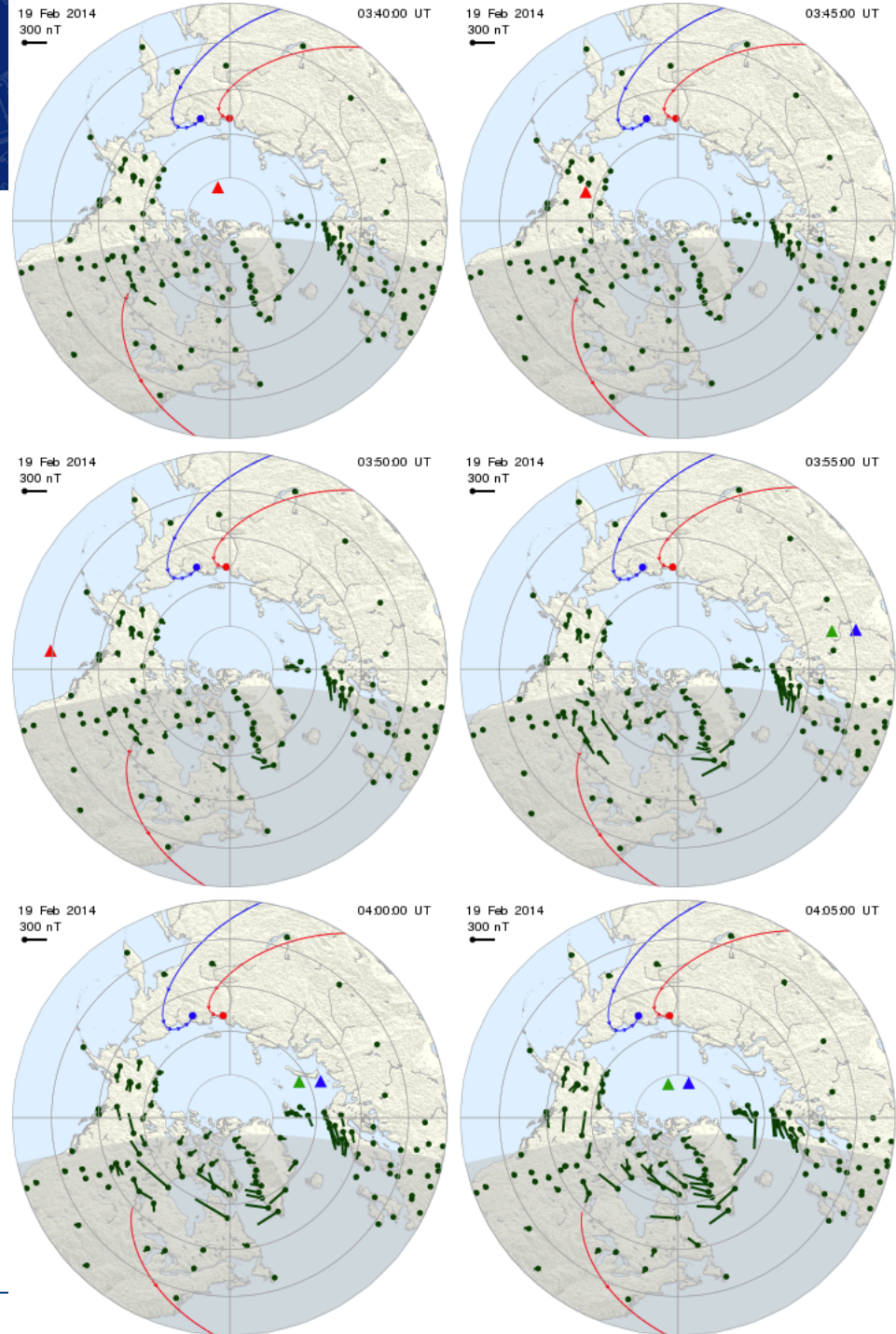
Tool #1: Global ULF

Processed, ingested and released all data from 1980-2014



Tool #2: Satellite Footpoints

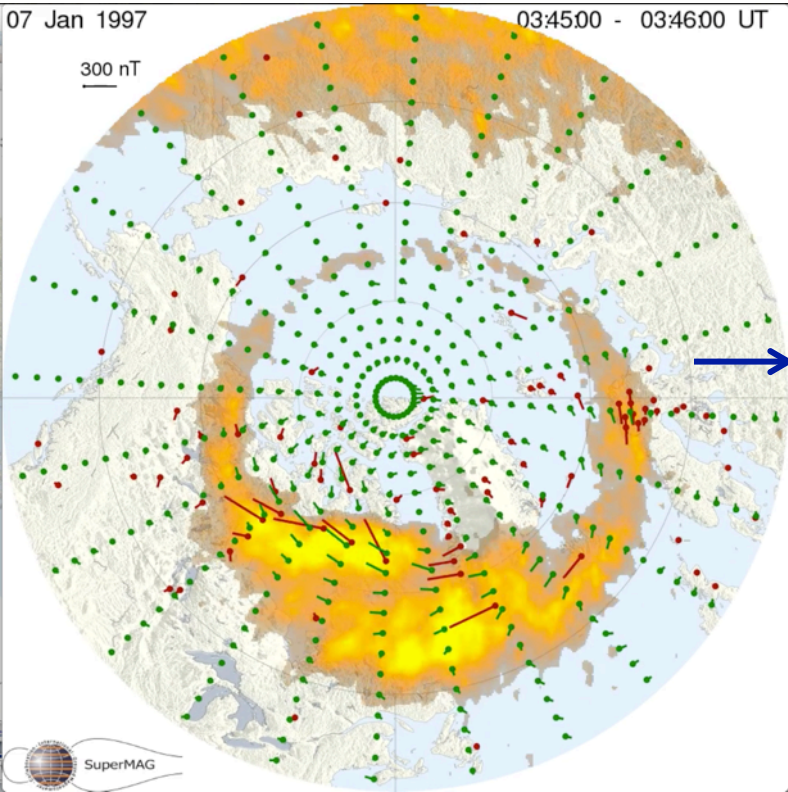
- Currently:
- NASA RBSP
 - ESA SWARM



Tool #3: Uniform Gridding

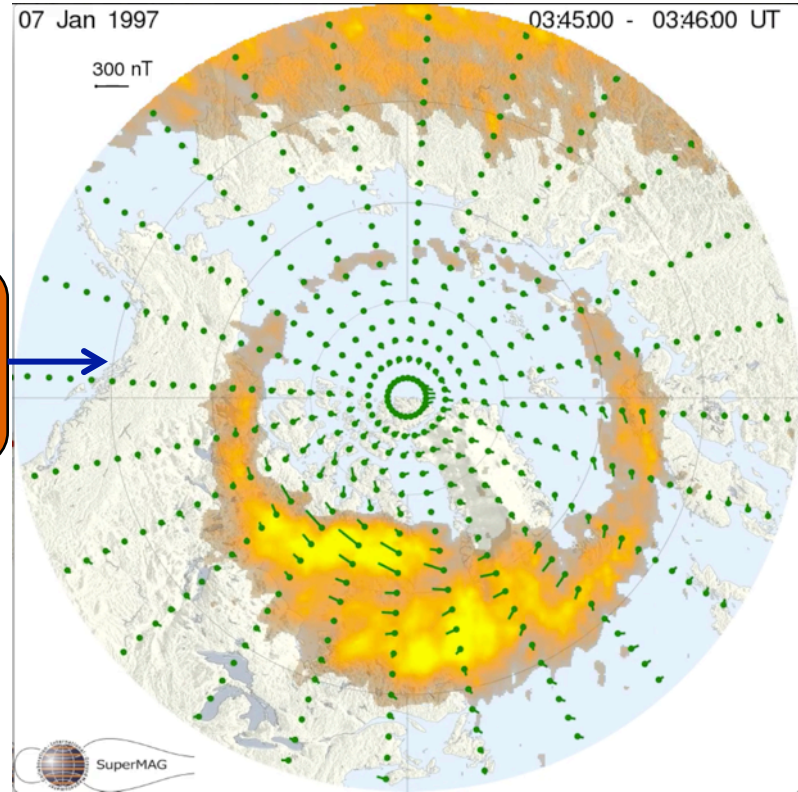
Waters, Gjerloev, Dupont, Barnes, JGR, 2015

Observations (red) and fill-in data (black)



Spherical cap harmonics fitting (weighted)

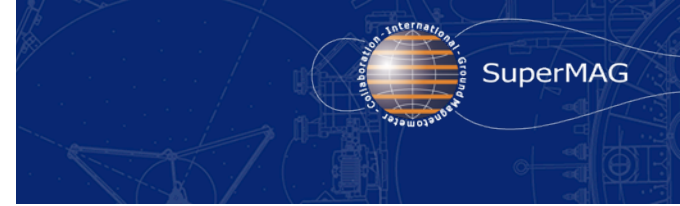
Final uniform distribution



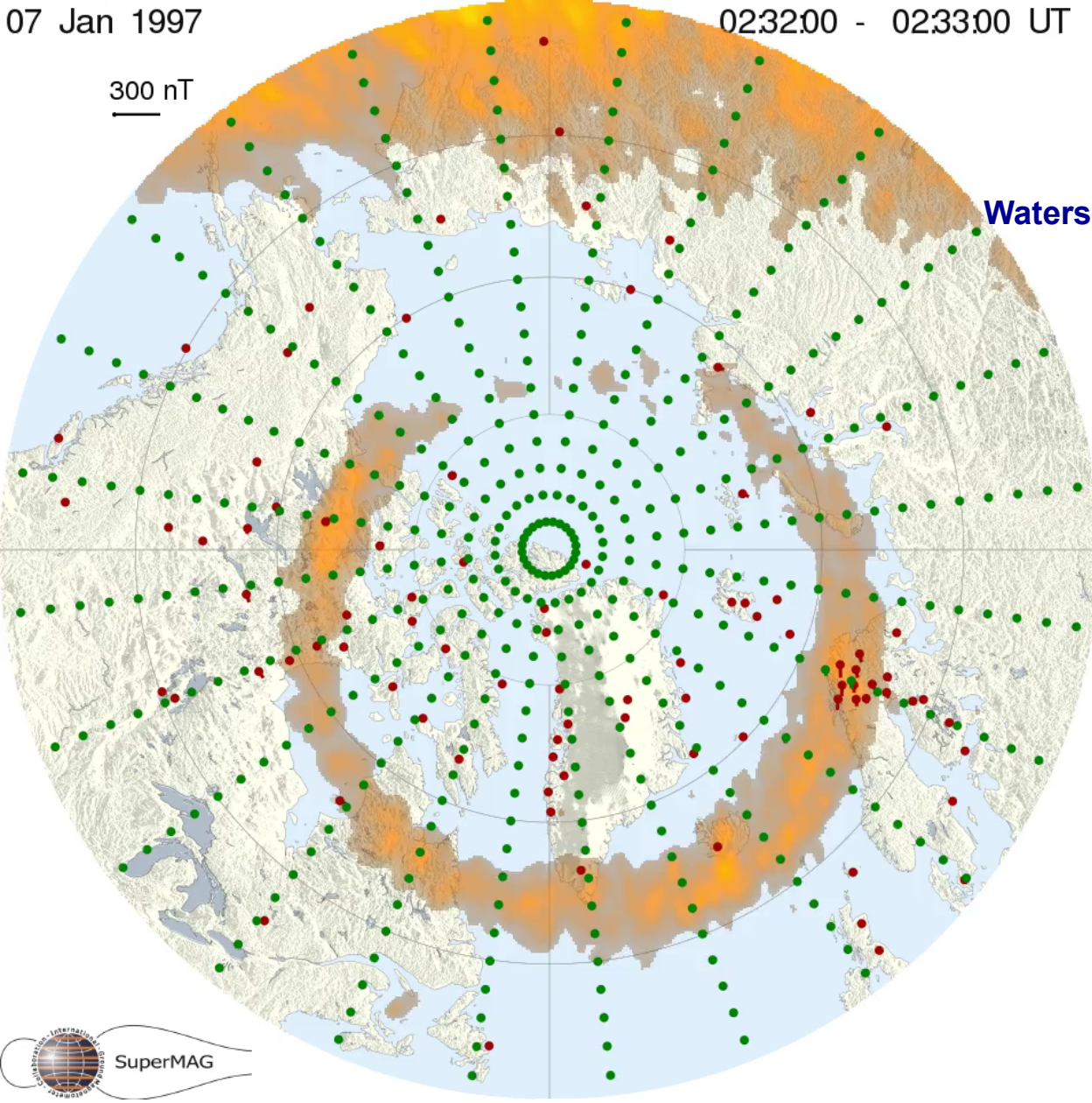
Multi-linear regression model: $y_i = \beta_0 + \beta_1 x_{1i} + \dots + \beta_k x_{ki} + \epsilon_i \quad (i = 1, ..n)$
 where β_k are the regression coefficients, x_{ki} are SuperMAG indices, and ϵ_i is the model errors.

07 Jan 1997

0232:00 - 0233:00 UT



300 nT



Waters, Gjerloev, Dupont, Barnes, JGR, 2015



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where β_k are the regression coefficients, x_{ki} are SuperMAG indices, and ϵ_i is the model errors.