Metrics for Global Time-Dependent Observational Data: TEC Example

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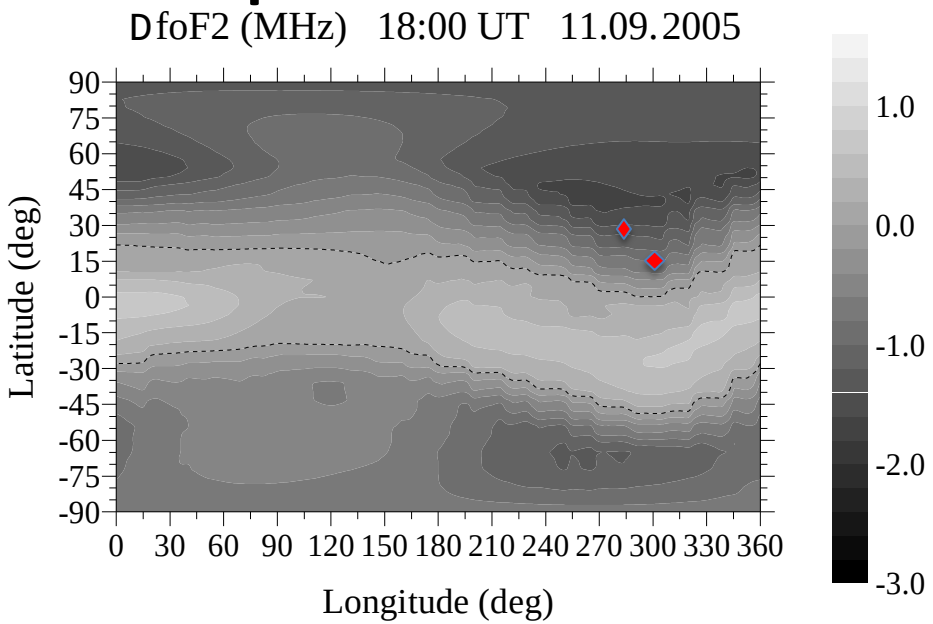
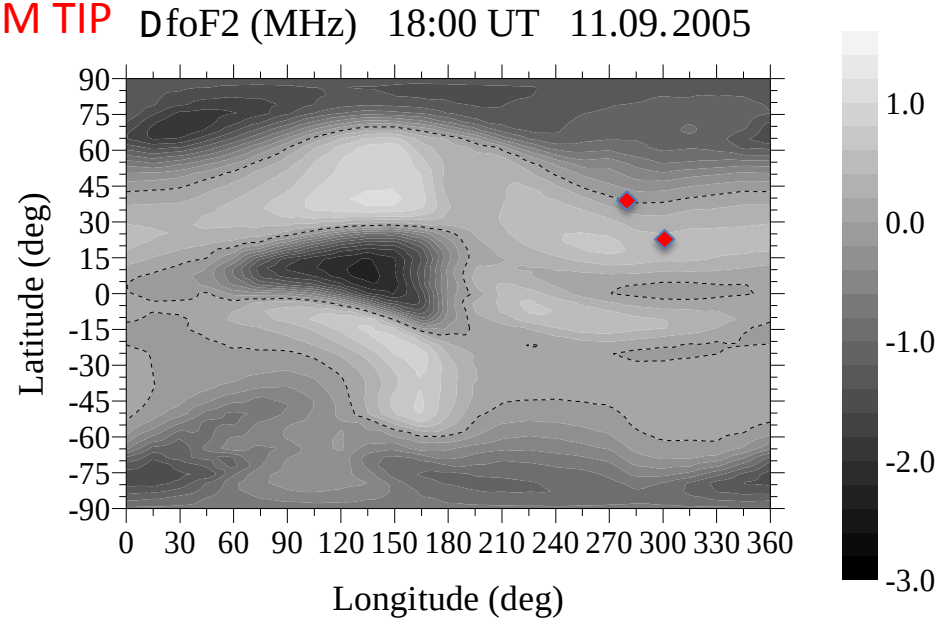
Example: foF2 in models, 11 Sep 2005

IRI



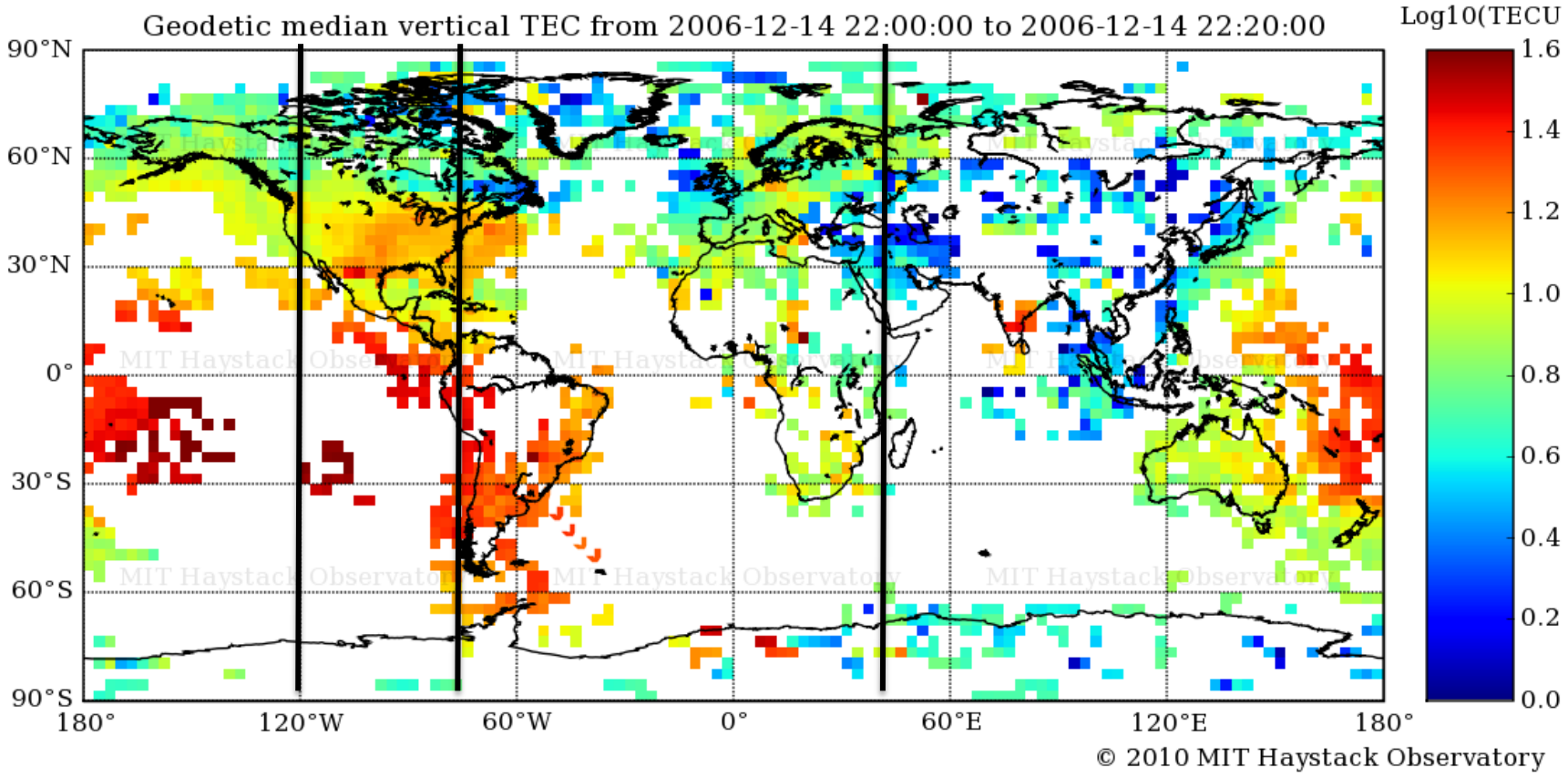
GCM TIP



- IRI:
  - narrow area of positive storm effect
- GCM TIP:
  - wider area of positive storm effect
  - complex structures in longitude
- ISR radars:
  - Much stronger positive storm effect

Klimenko et al., 2011

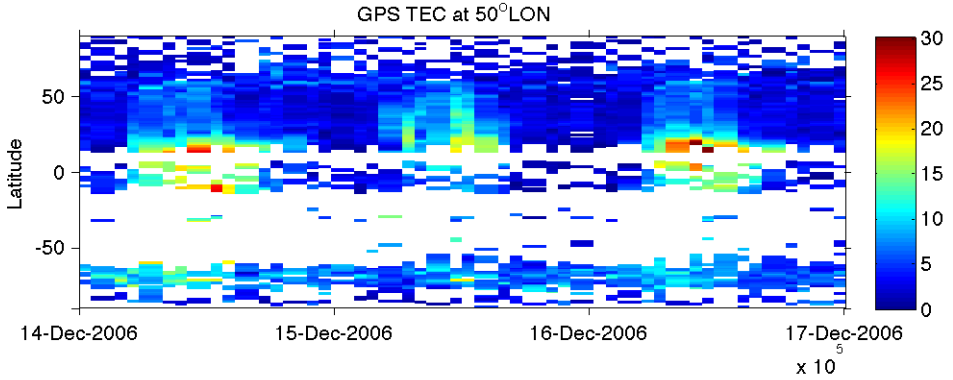
Example: GPS TEC on Dec 14, 2006, 22UT



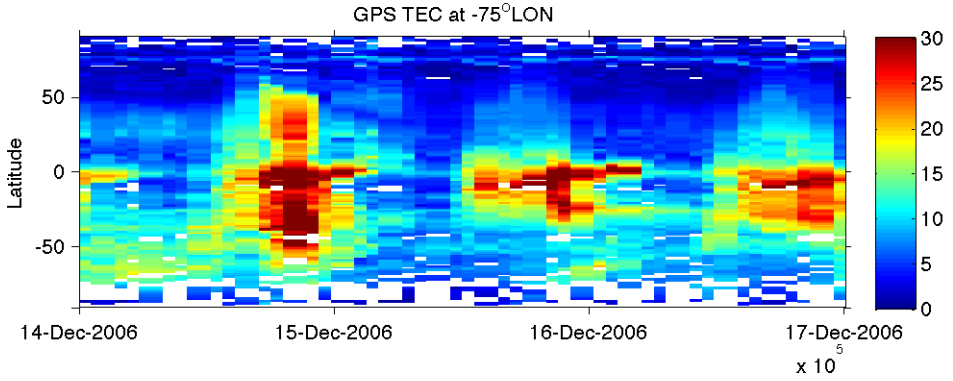
120W 75W 50E

Example: GPS TEC on Dec 14-16, 2006

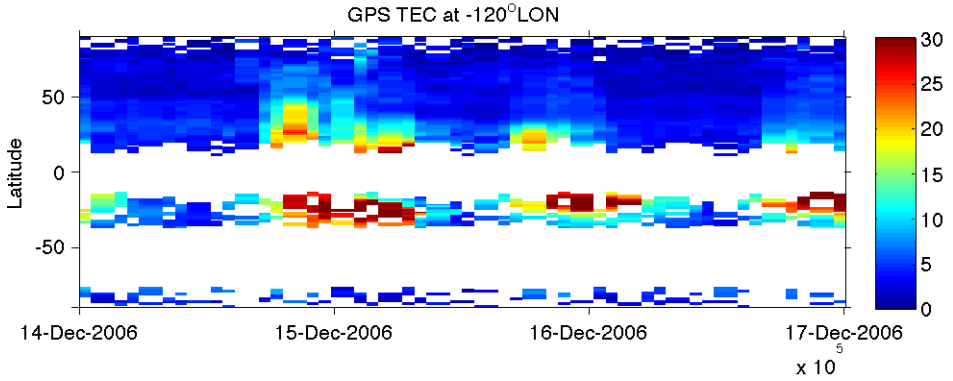
50E



75W



120W



- TEC data at three longitudes
- 1-hour bins
- 3 deg in lat

Making Global Data “Manageable”

- TEC ground stations: ~300 in 2000, ~2000 in 2008, every 5 min
  - Add TOPEX, JASON and COSMIC for ocean and land coverage (sparse)
- Choose ~5 longitude slices: 5 deg in glon, 5 deg in glat, every 20 min
  - max 36 lat bins (probably ~15) * 5 slices = ~75 “stations”

FUTURE

- **Fall AGU TEC posters** (Please contact leaders to join in!)
  - Ja Soon Shim et al.: Dec 2006 event
  - Emery/Goncharenko/Coster/Scherliess/Shim/etc et al. climatology during IPY solar minimum (Mar07-Mar08) from GPS (ground and satellite)
    - Delete storm days and consequent positive and negative storm effects
    - ~2month averages, ~15 deg glon, ~5 deg glat, each 1h UT

CEDAR Workshop 2012 Events and Climatology Challenge for TEC