Hokitika Integrated Sounding System

Bill Brown NCAR / EOL

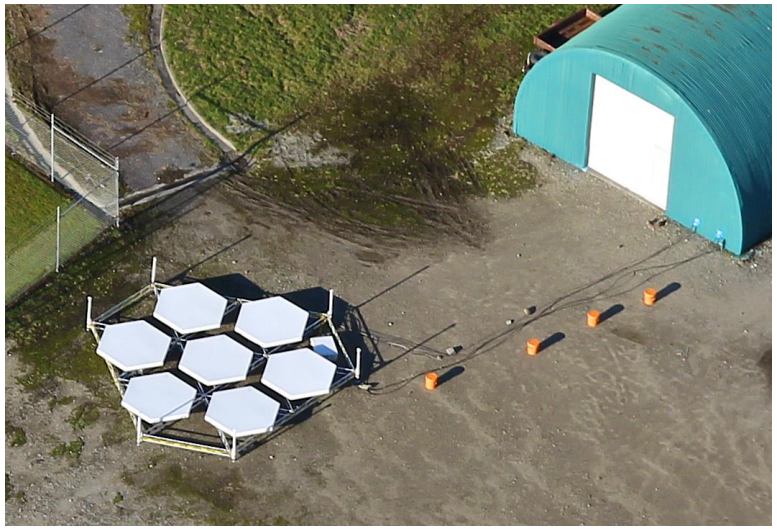
NCAR

EARTH OBSERVING LABORATORY

NSF

DEEPWAVE Workshop
23 October 2014

Hokitika ISS

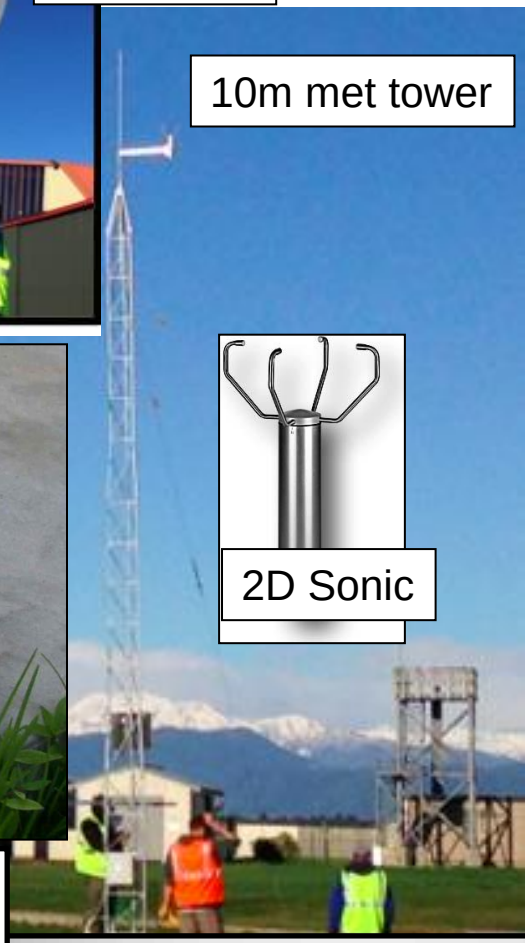


Monitored upwind flow on west coast
2 months of operation 28 May – 28 July

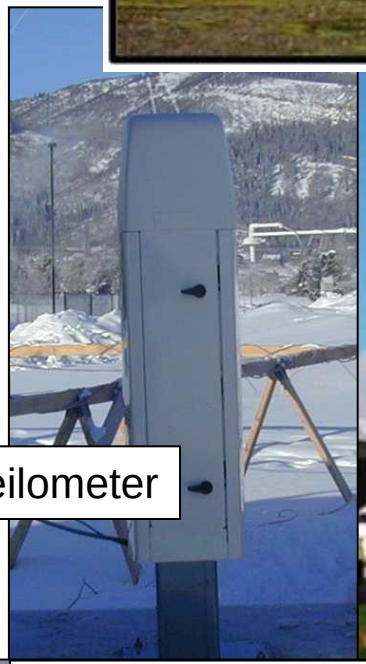
ISS

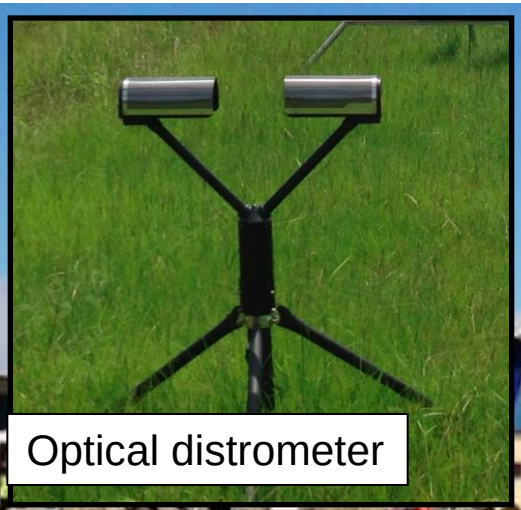

Radar Wind Profiler


Soundings


10m met tower

2D Sonic


ceilometer

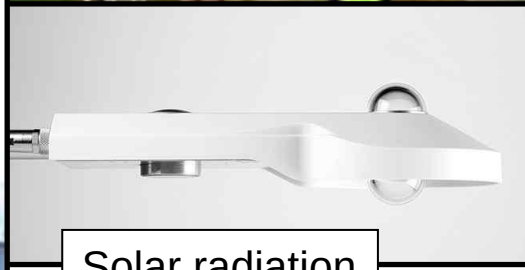

Optical distrometer


rain gauge


GPS water vapor


webcam


AllSky


Solar radiation

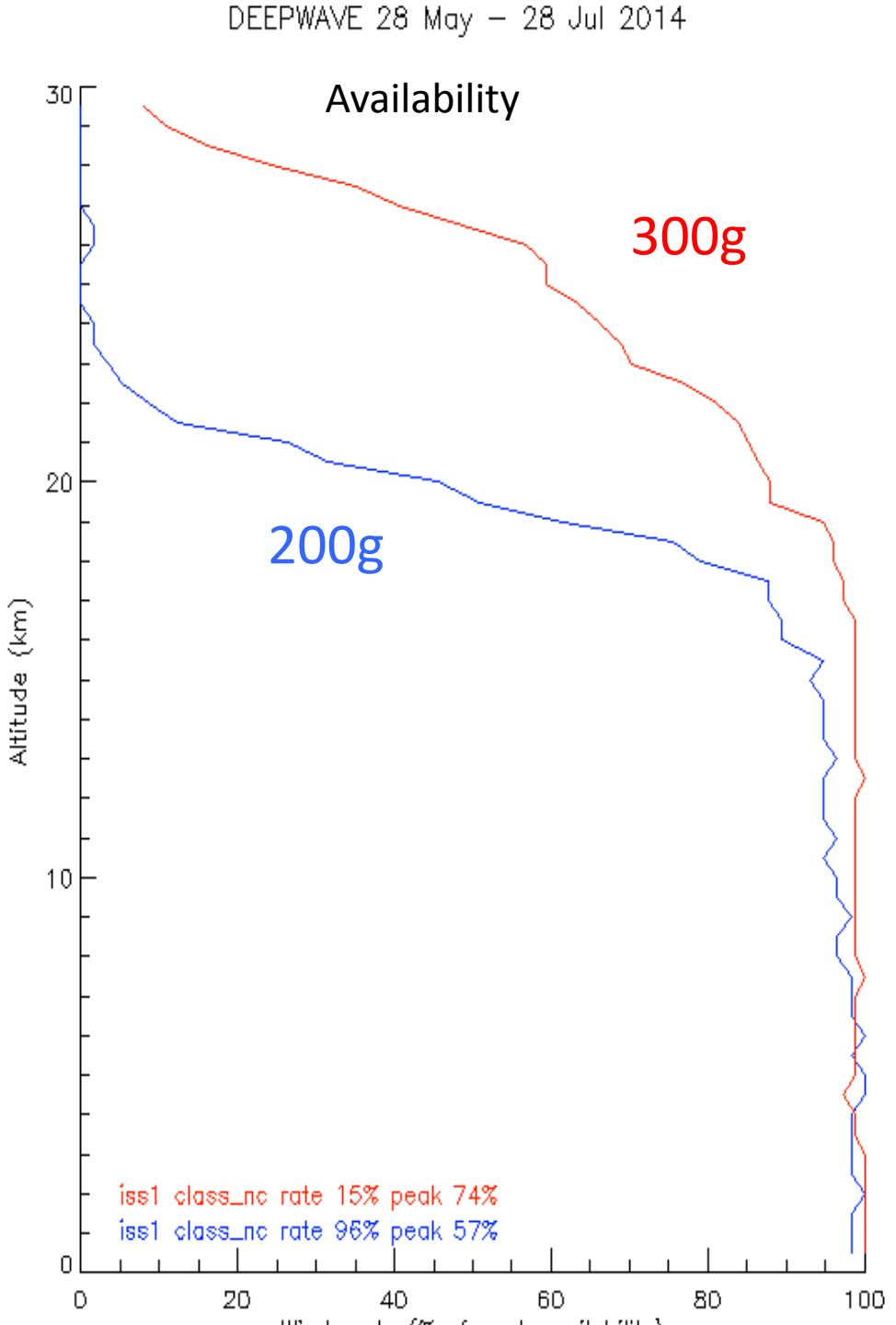
Soundings

146 Soundings

Daily soundings: 65 200g, typ 19km

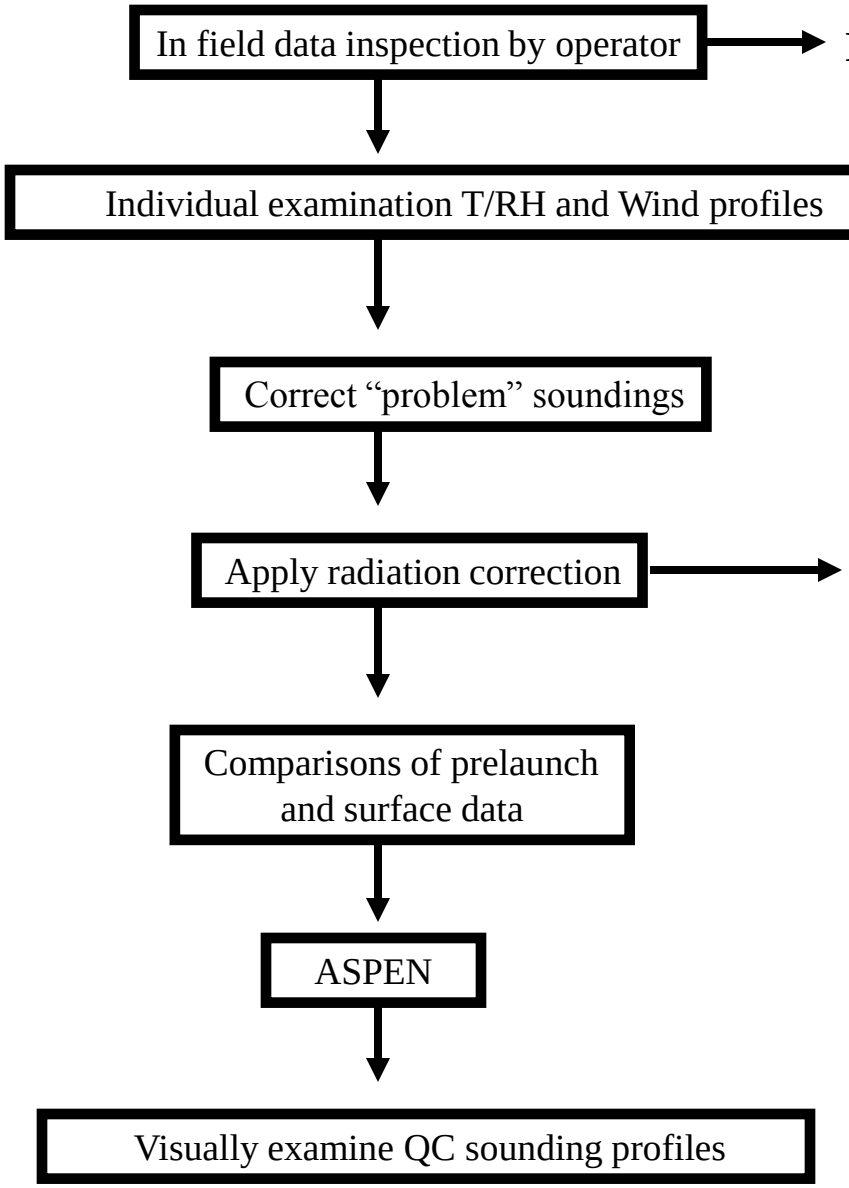
IOP soundings: 80 300g, typ 24km

Thank you to the students!



Quality Control of Radiosonde Data

Kate Young



Entry of anything suspicious into electronic log

Can detect:
Sounding system lockup
Errors with the automatic launch detect
RH sensor offsets
Slow ascent rates
Descending data

Takes into account solar angle at time of launch
And removes solar heating that could skew T

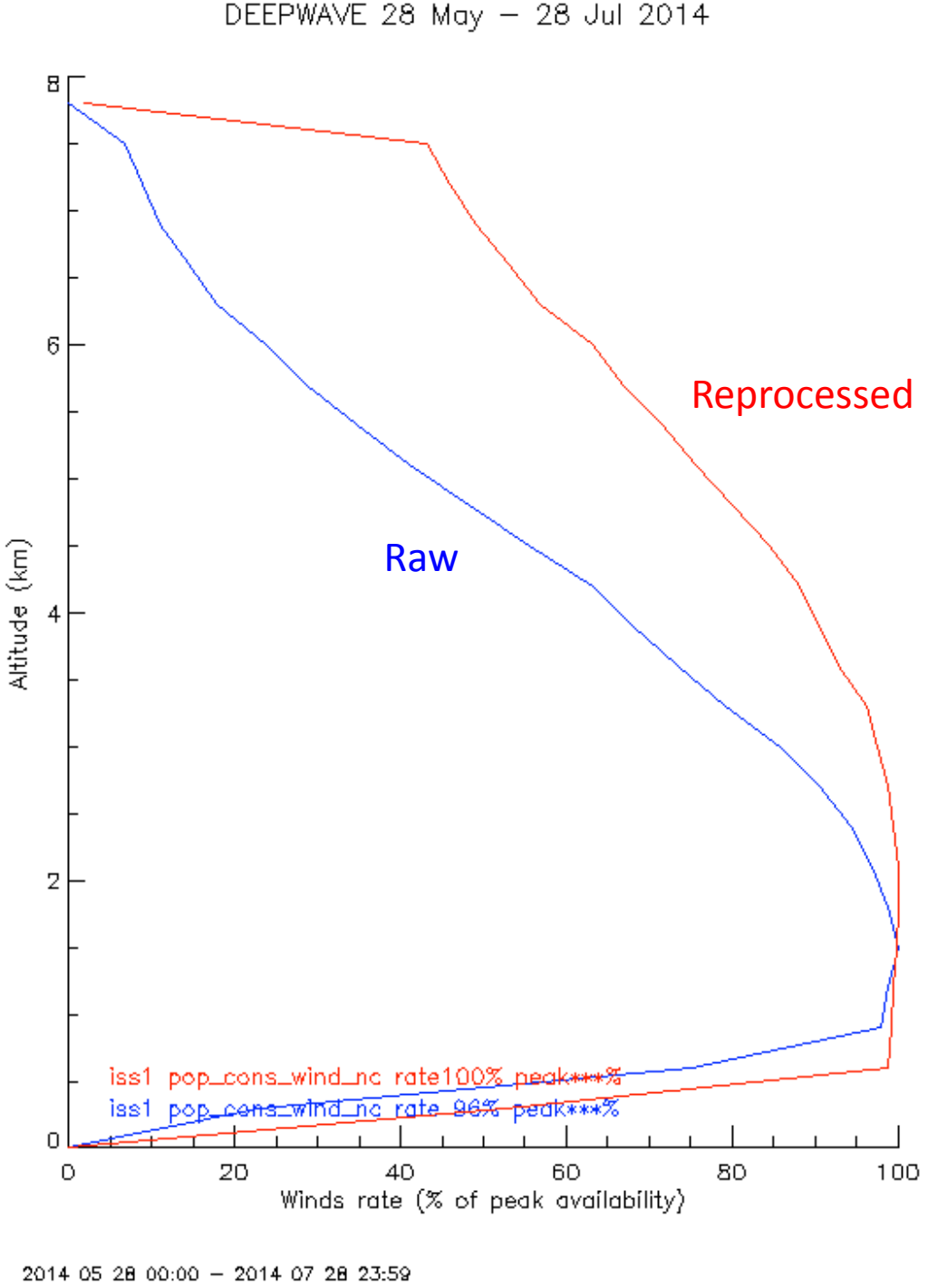
- 146 soundings
- Very few failures
- QC nearly complete

Radar Wind Profiler

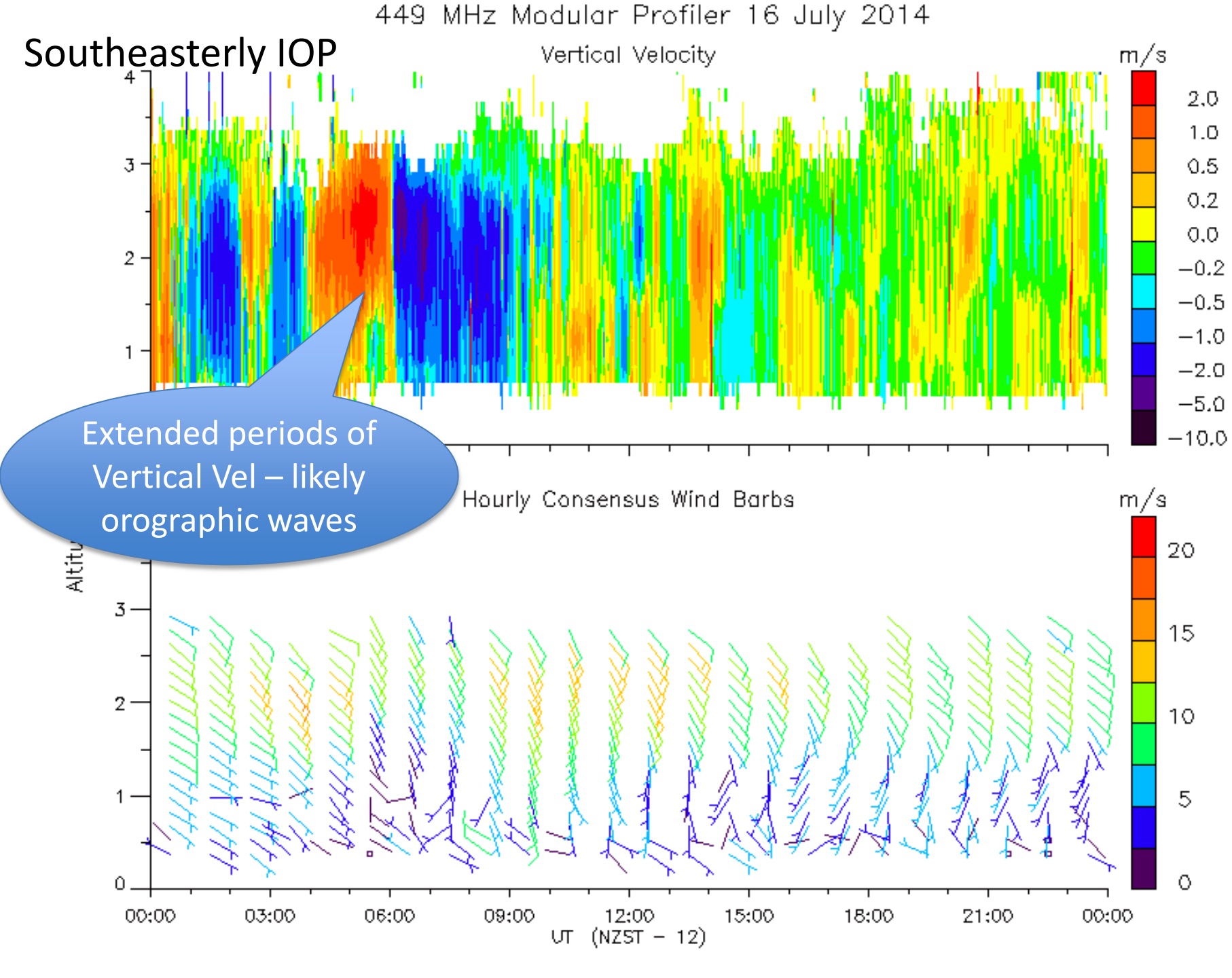
- 449 MHz Modular Wind Profiler
- Added modules to increase power and sensitivity to get to higher altitudes and above the coastal jet
- Produced almost continuous winds at mountain top level

Wind Profiler Coverage

- Real-time processing gave approx 4km altitude coverage
- Winds agreed with soundings to approx 2 m/s
- Reprocessing data
  - extra altitude, approx 5km
  - improved agreement with sondes

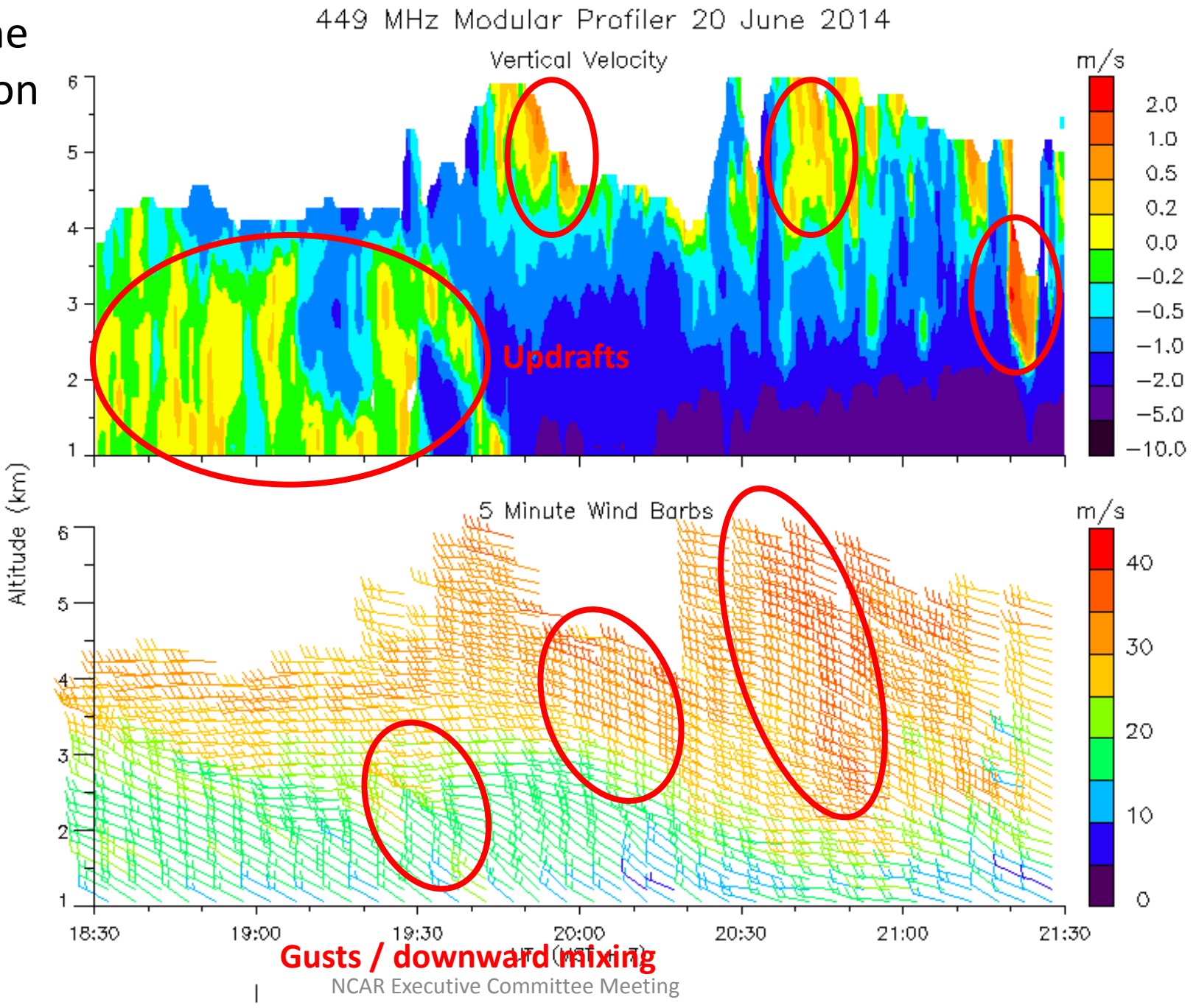


Southeasterly IOP



Extended periods of Vertical Vel – likely orographic waves

High Time Resolution Example



5 minute winds

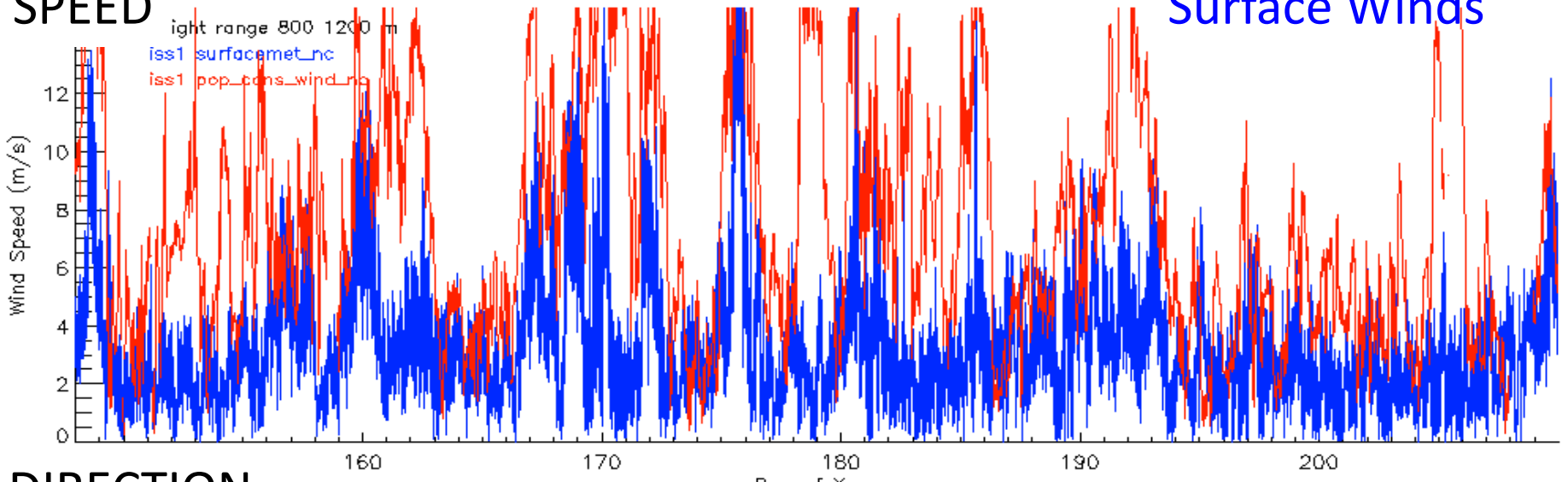
Gusts / downward mixing

Time Series of Winds

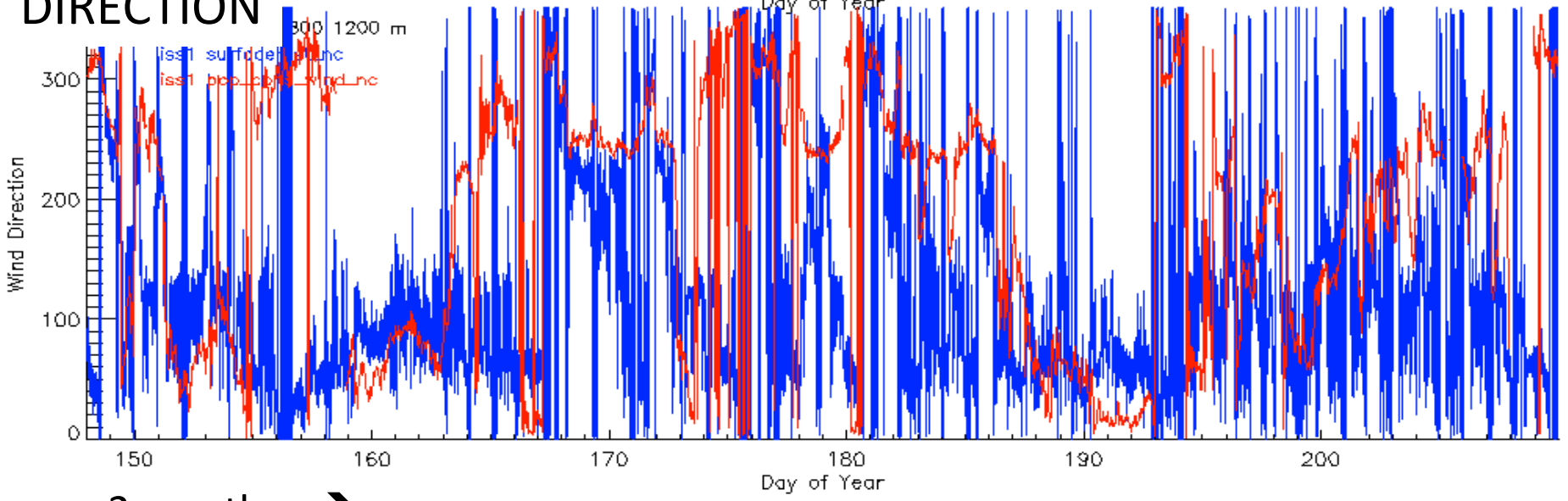
Profiler at 1 km

Surface Winds

SPEED



DIRECTION



2 months ➔

Summary

- 2 months of operation (28 May – 28 July)
- Soundings, radar wind profiler, surface obs, GPS WV, web cameras, ceilometer
- Soundings
  - 146 soundings
  - QC almost complete
- Wind profiler
  - Reprocessing data (4 TB)
  - Fine scale and large scale features

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EARTH OBSERVING LABORATORY
Development Deployment Data Services Discovery

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