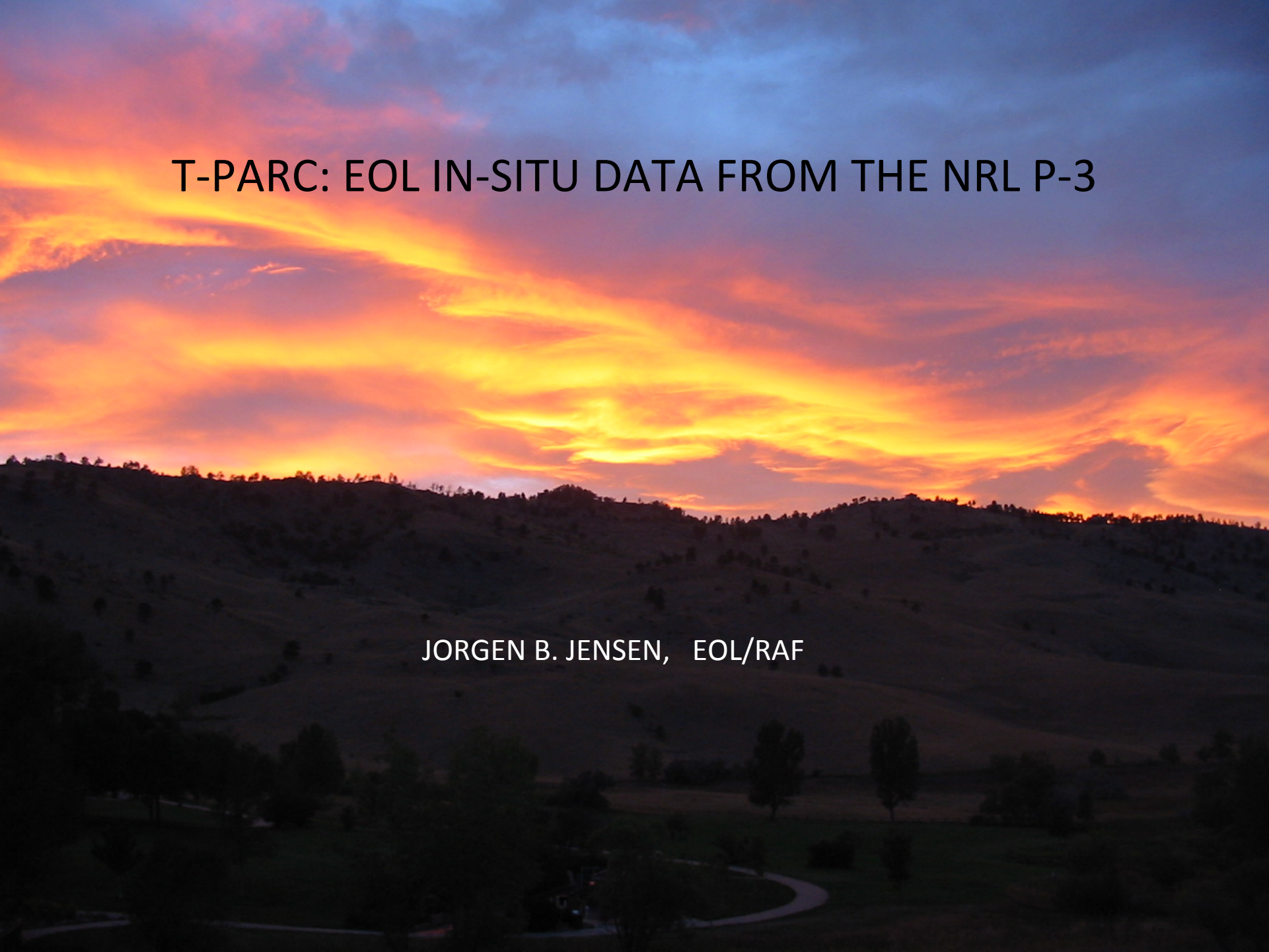
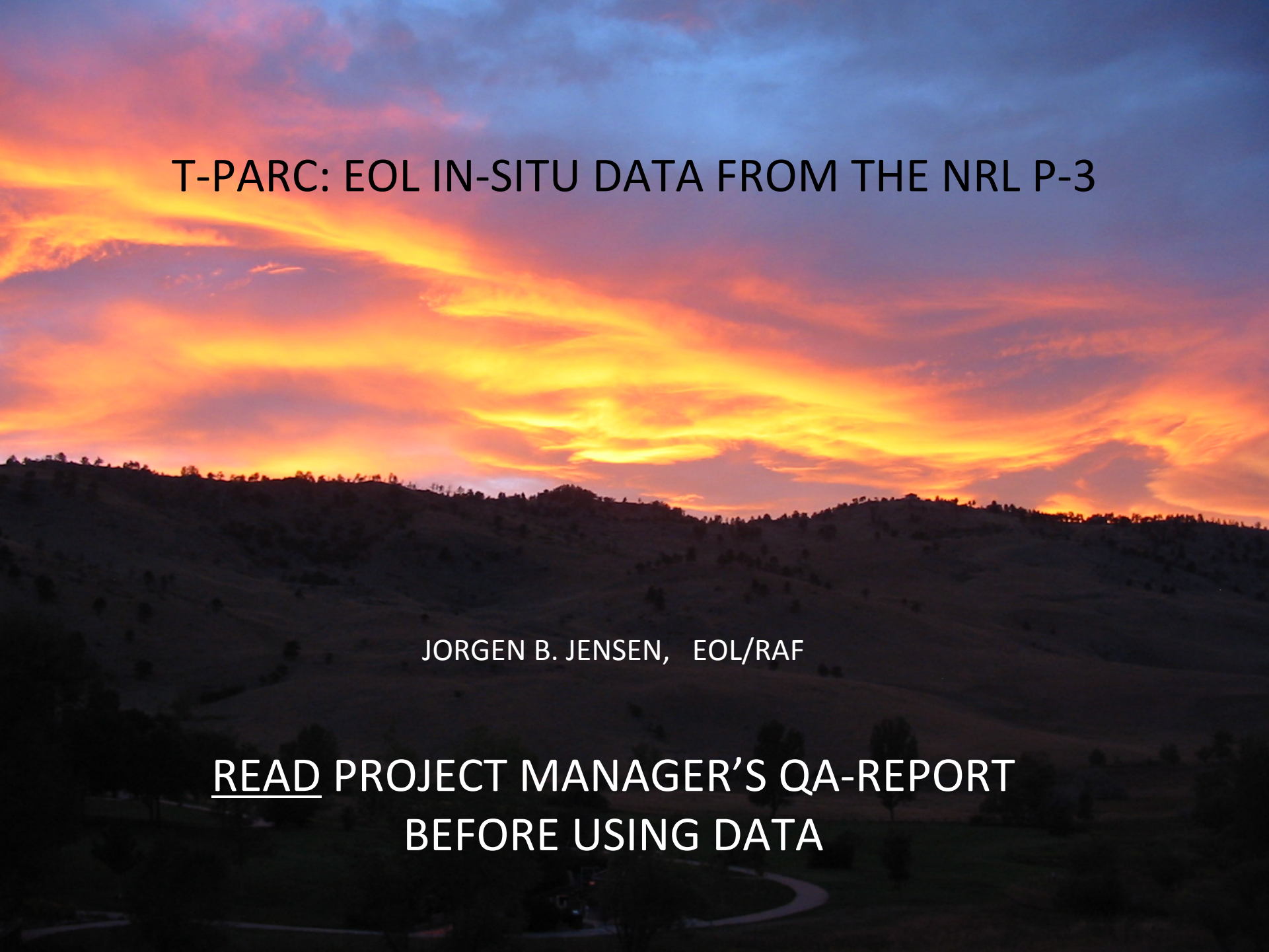


T-PARC: EOL IN-SITU DATA FROM THE NRL P-3

JORGEN B. JENSEN, EOL/RAF



T-PARC: EOL IN-SITU DATA FROM THE NRL P-3

JORGEN B. JENSEN, EOL/RAF

READ PROJECT MANAGER'S QA-REPORT
BEFORE USING DATA

INSTRUMENTATION

State parameters:
- Static pressure (heated pitot tube)
- Temperature (2x un-heated Rosemount)
- Dewpoint temperature (cooled mirror)

Air speed and flow angles:
- Heated pitot tube (air speed)
- 5-hole radome (not heated)
  - Attack, sideslip

Position:
- Inertial system (Honeywell)
  - Lat, long, pitch, roll, heading
  - Ground speed, accelerations
- GPS (Garmin)
  - Lat, long, ground speed
- Radar altitude

Add list of QA checks done:

- Pre-field and post-field calibrations
- Visual timeseries analysis
- Reverse heading legs
- Attack = pitch analysis
- Temperature recovery factor
- Spike removal
- Flagging (blank-out) bad data (value of -32767 inserted)
- Temperature comparison with dropsondes
  - (identify damaged sensor)

INSTRUMENTATION

Choice of parameters when there are more than one sensor:

PSX Pressure
ATX Temperature
TASX True air speed
etc.

"Best" ends in "X"

TOTAL OF 23 RESEARCH FLIGHTS

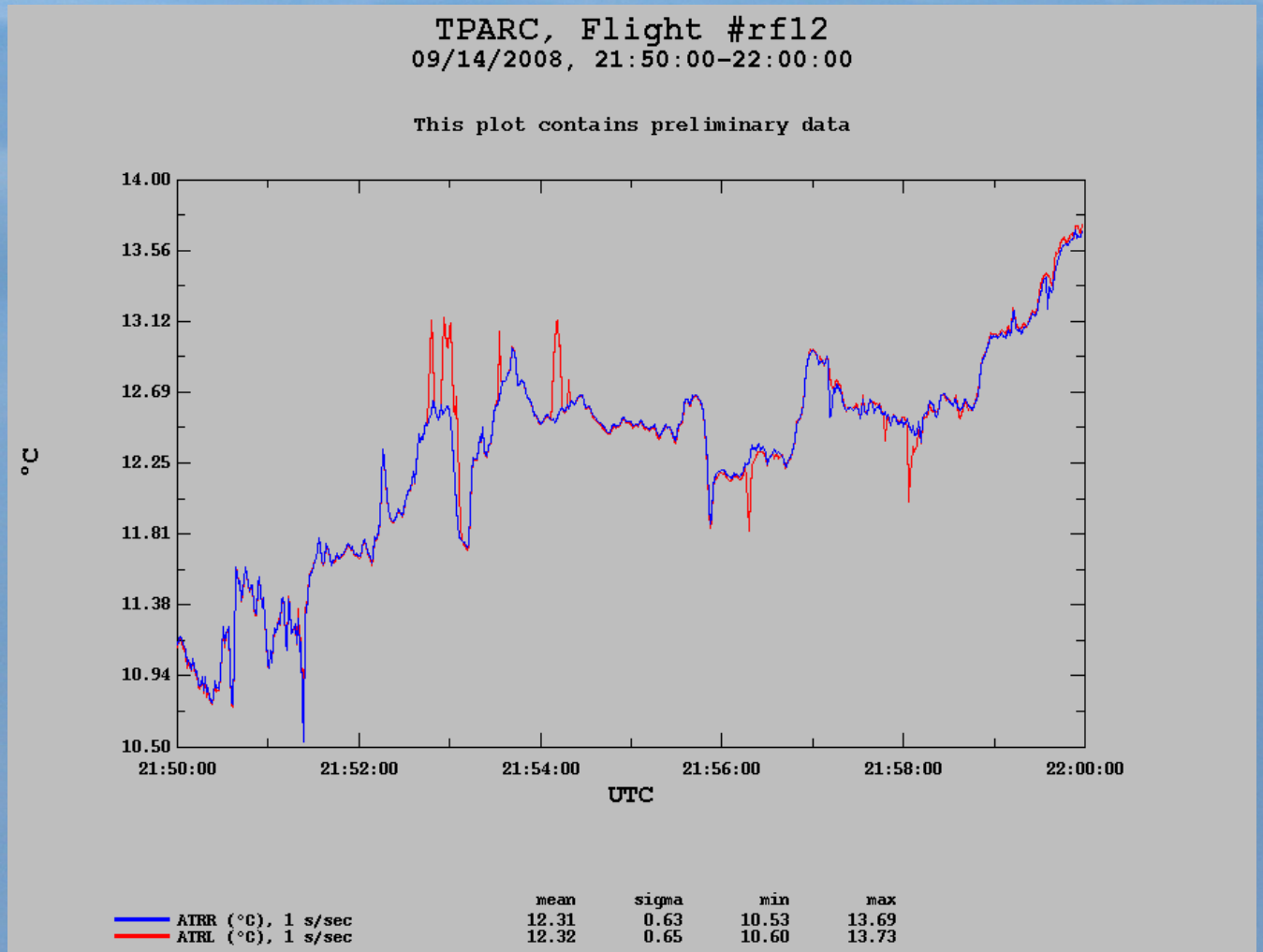
DATA UPLOADED TO THE MAIN EOL T-PARC DATA ARCHIVE:

http://data.eol.ucar.edu/master_list/?project=T-PARC

Data in 1-sps netcdf file format

Temperature (2x un-heated Rosemount)

Radio interference - occasionally



Temperature (2x un-heated Rosemount)

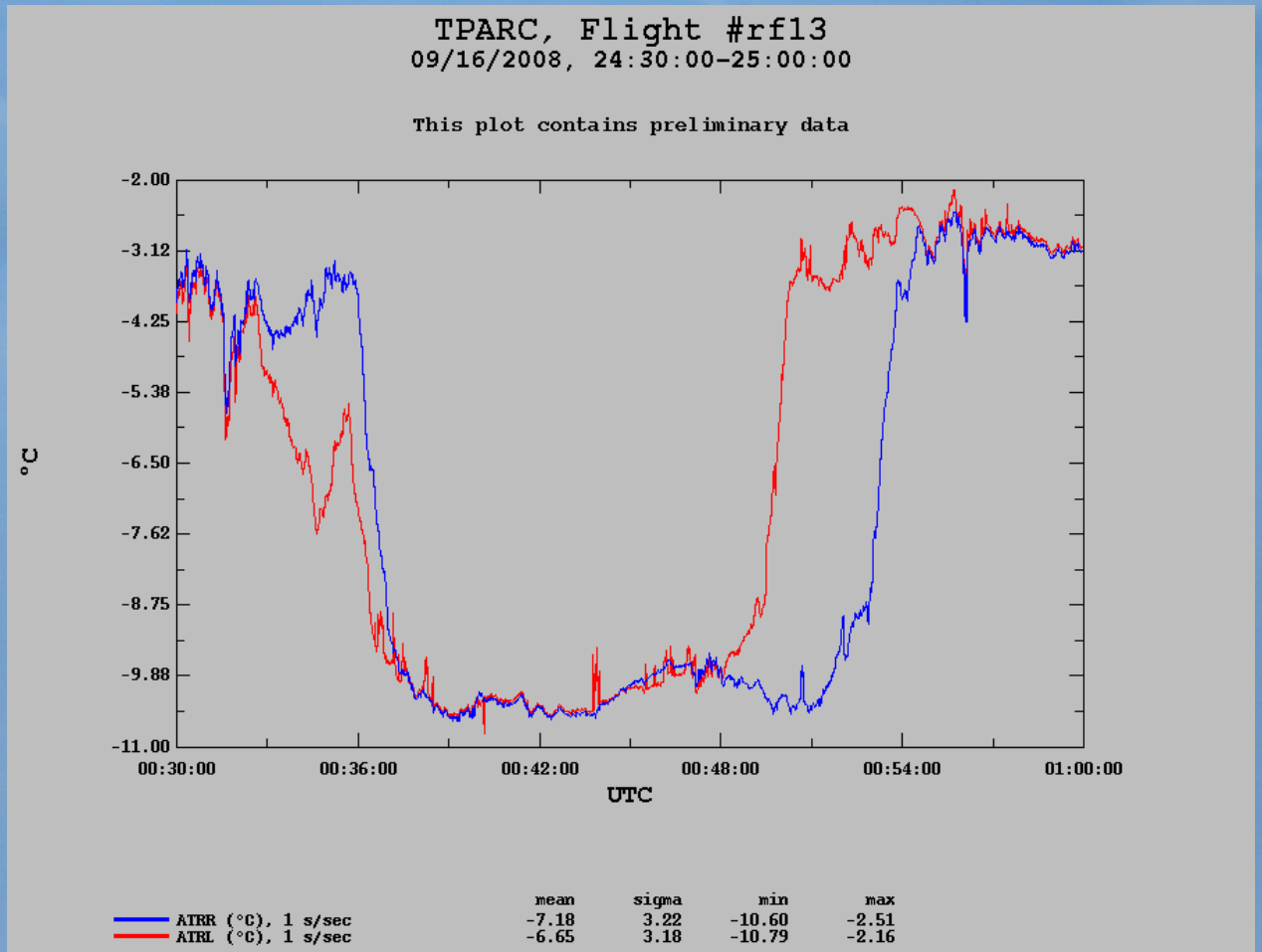
Icing -
very damaging.

Results in stretched wire and thus calibration shift.

Multiple sensors changed,

but redundant sensors gave mostly good measurements.

Periodic problems noted.

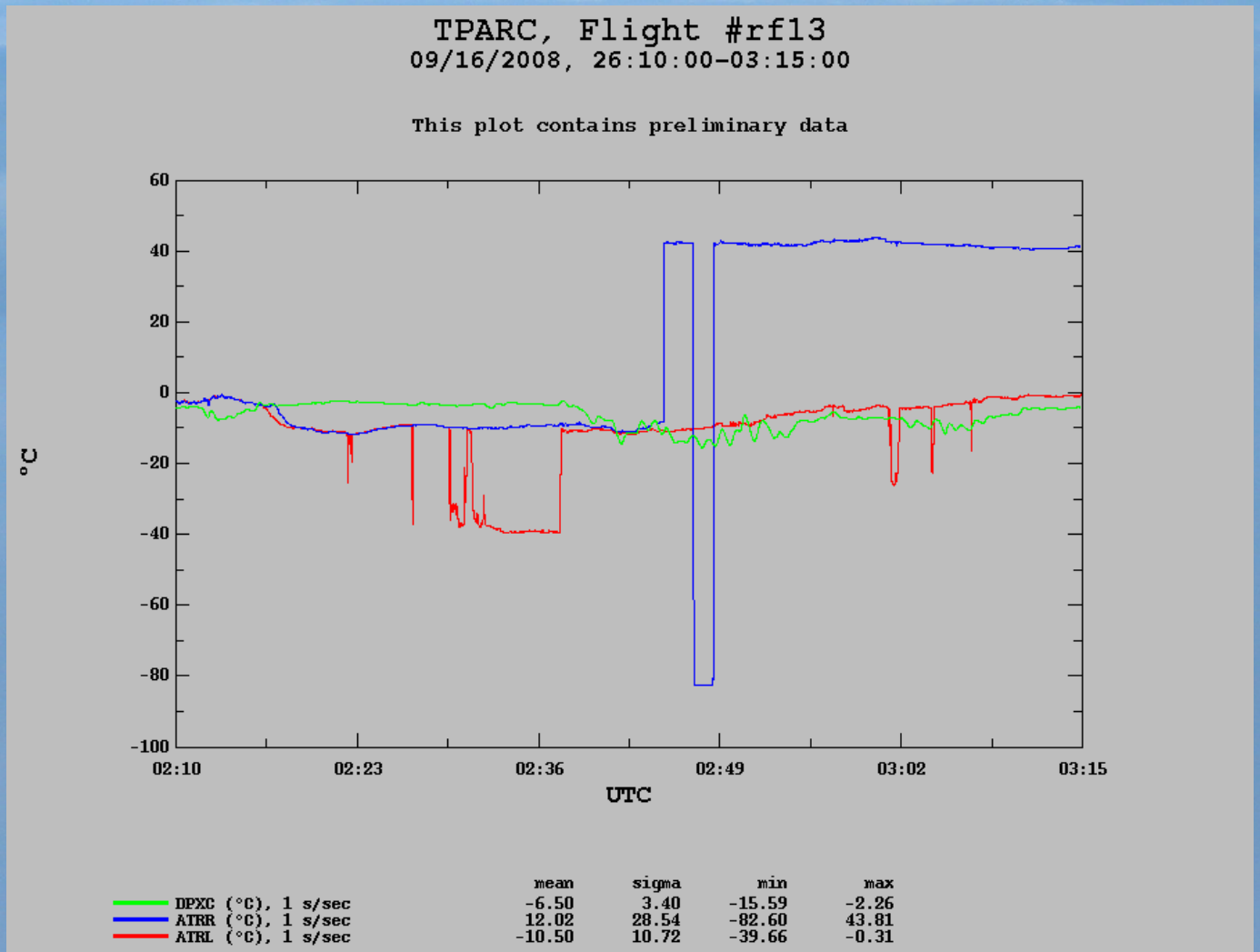


Temperature (2x un-heated Rosemount)

Icing -

Elements breaking.

Bad data blanked out, but there is an impact on many derived parameters, e.g. winds.



Dewpoint temperature:
Cooled mirror type.

Mostly fine, occasional oscillations

Inability to cool mirror in very dry air
- not a serious problem during T-PARC on-station times

Attack and sideslip angles

5-hole radome pressure measurement (Note: un-heated)

Radome re-surfaced =>
different geometry around holes (calibration change).

Attack-sensor malfunctioned 3 times and was swapped.

Historically exceptionally stable.

Stable sensor in the lab; not on the aircraft.
Day-to-day post-flight calibration change.

Main impact is on calculated updraft.
Updraft has lower accuracy than horizontal winds.

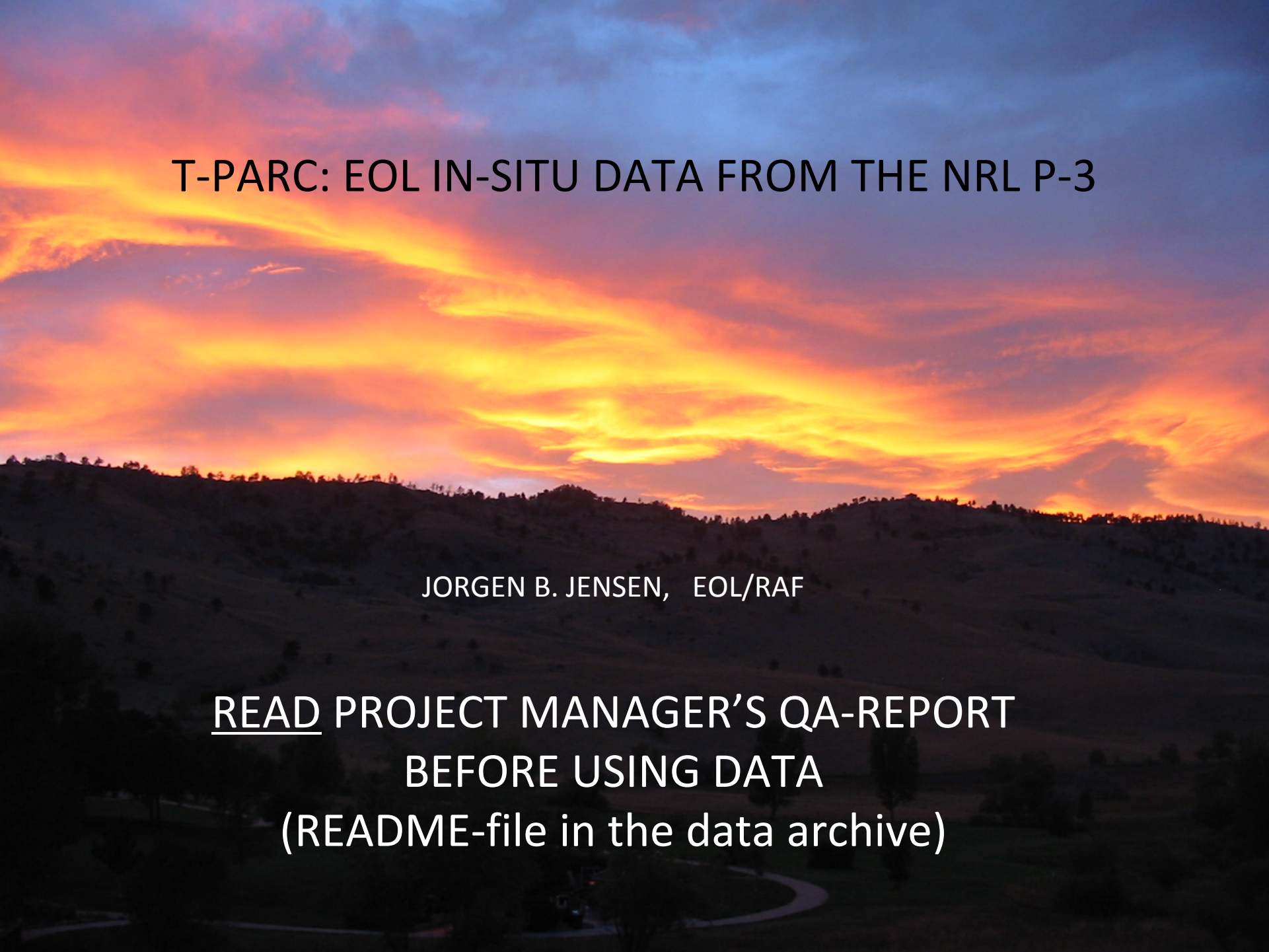
In-flight calibration to attack-angle sensitivity and offset

In-flight calibration to differential pressure (QCFC and QCRC)

Corrections needed:

Data error at near midnight GMT file starts in some files.

If users find any errors, then please contact jbj@ucar.edu



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READ PROJECT MANAGER'S QA-REPORT
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(README-file in the data archive)