



What should we do about met (sensor) data?

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Met_data activity

- Suggested goals
 - Establish database of instruments, measurements, and procedures
 - Review information for consistency
 - Establish standards for measurements
- <http://mars.hg.tuwien.ac.at/~ivstrop/ivsmet.html>

Met_data activity

- <http://mars.hg.tuwien.ac.at/~ivstrop/ivsmet.html>
- Robert Heinkelmann

station ^{1,2}	station config file	last update	dates of replacement, relocation, calibration, ...	Dh = "height of sensor minus height of VRP" [m]	corrections applied to raw readings
GILCREEK	yes	3/2/2007	1986-04-30, 2004-12-09(*)	-12.411, -3.673±0.762(*)	
HARTRAO	yes	9/19/2000			
HOBART26	yes	9/10/2004		-2.23	
HRAS 085	no				
KASHIM34	yes	5/25/2004	1/1/1995	-16.1	
KASHIMA	no			-6.2	
KAUAI	no				
KOKEE	yes	2/10/2000	1984-05	-18	



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Suggestion

■ One self-contained file per instrument

```
westford_pressure_1.txt
```

Name	epoch	hh	mm	value	sig	cal_error	sigma	X	Y	Z
w_p1	20060111	23	05	1004.5	0.2	0.9	0.5	6378000.0	4577000.0	1200000.3
w_p1	20060112	00	05	998.5	0.2	1.2	0.5	6378000.0	4577000.0	1200000.3
w_p1	20060112	00	10	997.4	0.2	1.2	0.5	6378000.0	4577000.0	1200000.3
w_p1	20060112	01	10	990.4	0.2	1.2	0.5	6378999.0	4577999.0	1200999.3

■ Separate files for temperature and humidity

- Allows for different temperature sensors, e.g. outside radome and at various positions on pedestal.
- Each technique calculates correction to intersection of axes since position of sensor contained in file.



Problems

- Measurement uncertainties
- Calibration
- Corrections
- Format
- Application to observations

Corrections to be applied

- Calibration error
- Position (height) correction
 - **Give geocentric XYZ of each sensor**
 - (allows for multiple sensors, e.g. temperature at different heights)

Suggestion

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Uncertainties

- Calibration (bias uncertainty)
- Measurement standard deviation
- How to propagate to estimation?
- Correlations over time?
- Correlations with other effects, e.g. antenna thermal deformation and ?

Calibration

- How to calibrate?
 - Bring calibration set to site
 - Remove met sensors and send away
 - Compare with “nearby” good instruments
 - Compare with Numerical Weather Product
- How often?
- What to do if met sensors have changed?
 - i.e. how to interpolate between calibrations

Storage and Format

- METEX (rinex-like)
- NetCDF (or similar)
- Continuous time-tagged (but separate for each pressure and temperature sensor)

yymmddhhmmss X Y Z P sigmaP Pcal_error Pcal_uncert

- Name-list

Application in Estimation

- Store in “database”
- Read files at estimation time
- Other?

