# **Upper-air observations**

Per Dahlgren

## Data availability

Recovered upper-air data archived at ECMWF (in MARS)

NCAR upper-air archive NCAR CHUAN holding CHUAN ERACLIM extension	1759 1761	class e2 e2 e2	stream da da da	obsgroup conv conv conv
CHUAN 2.0	2491	e2	da	conv

Data retrieved at ECMWF

Contents converted into ODB2 format, tools from Hans Hersbach

ODB2 data archived in MARS

#### Recovered upper-air data archived at ECMWF (in MARS)

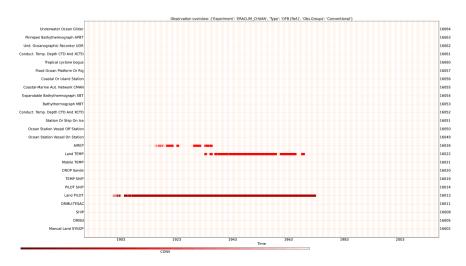
#### Data availability

NCAR upper-air archive NCAR CHUAN holding CHUAN ERACLIM extension	Expid 1759 1761 1770	class e2 e2 e2	stream da da da	obsgroup conv conv conv
CHUAN 2.0	2491	e2	da	conv

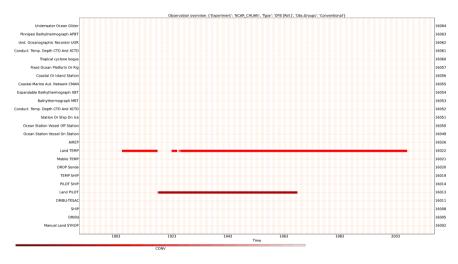
1759

#### Observation overview: {'Experiment': 'NCAR\_UA', 'Type': 'OFB [Ref.]', 'Obs.Groups': 'Conventional'} Underwater Ocean Gl Pinniped Bathythermograph APBT 16063 16062 Und. Oceanographic Recorder UOR 16061 Conduct Temp, Depth CTD And XCTD 16060 Tropical cyclope boou Fixed Ocean Platform Or Rio 16057 Coastal Or Island Stati 16056 Coastal-Marine Aut. Network CM/ 16055 16054 Expandable Bathythermograph XBT Bathythermograph MB 16053 16052 Conduct. Temp. Depth CTD And XCTD 16051 Station Or Ship On Ice Ocean Station Vessel Off Statio 16050 Ocean Station Vessel On Static 16049 16026 Land TEMP 16022 Mobile TEMP 16021 DROP Sonde 16020 TEMP SHIP 16019 PILOT SHIP ..... 16014 Land PILOT 16013 DRIBU-TESAC 16011 SHIP 16008 DRIBU 16005 Manual Land SYNOP Time

1770



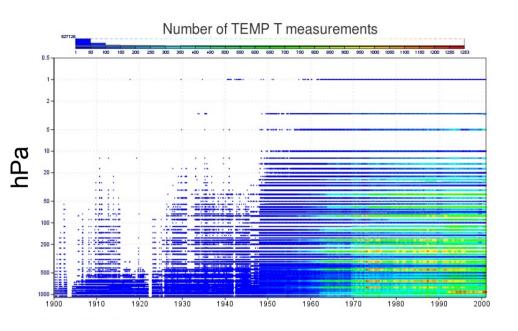
#### 1761

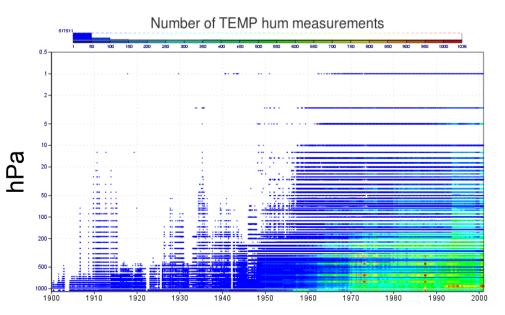


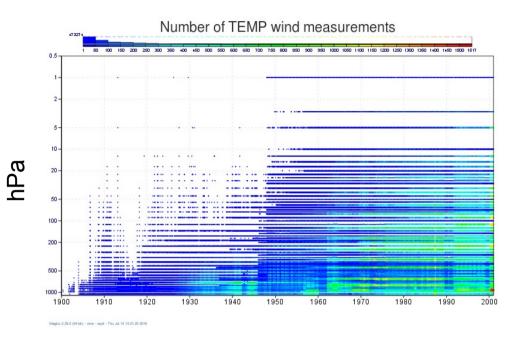
2440



#### Data availability







#### Available upper-data, all sources combined duplicates removed (!)

# Using special data sets in IFS

Surface data			
ISPD22	1607	e2 da conv	
ISPD326	1722	e2 da conv	
ICOADS25	1608	e2 da conv	
Upper-air data			Special data sets archived in MARS In <i>ODB2</i> format
ncar_ua	1759	e2 da conv	
ncar_chuan	1761	e2 da conv	
eraclim_chuan	1770	e2 da conv	
Chuan20	2491	e2 da conv	

- The structure of IFS is undergoing major restructuring (OOPS,COPE)
- The way special data sets has been read into the assimilation (CERA-20C/ERA-PreSAT) can not be done in CERA-SAT or ERA5
  ==> data has to be read via COPE

**COPE=Continuous Observation Processing Environment** 

# Using special data sets in IFS

- Circumventing COPE with "quick fixes" to get the data into assimilation is a bad idea
- COPE involves major restructuring of the data flow of observations, e.g.:
  Where in the processing chain observation errors are assigned
- Reading the special data sets through COPE ensures solutions that will be sustainable and more easily utilised in reanalysis systems based on new IFS versions (CERA-SAT/ERA5)

## Using special data sets in IFS

#### Status

- Running a CERA-SAT experiment in 1956
- Able to read ISPD/ICOADS (surface data)+ upper-air data into the assimilation ==> and 4D-Var minimises!
- Needs some further attention:
  - Vertical coordinate change for TEMP data on height levels
  - Make sure RAOBCORE bias corrections applied correctly
  - Run experiments with ERA40 (MARS data in BUFR) observations together with special data sets
- Scientific experimentation can hopefully begin in 1-2 months