



*Norwegian  
Meteorological Institute  
met.no*

Status IOMASA at met.no - WP 2.1, 2.2

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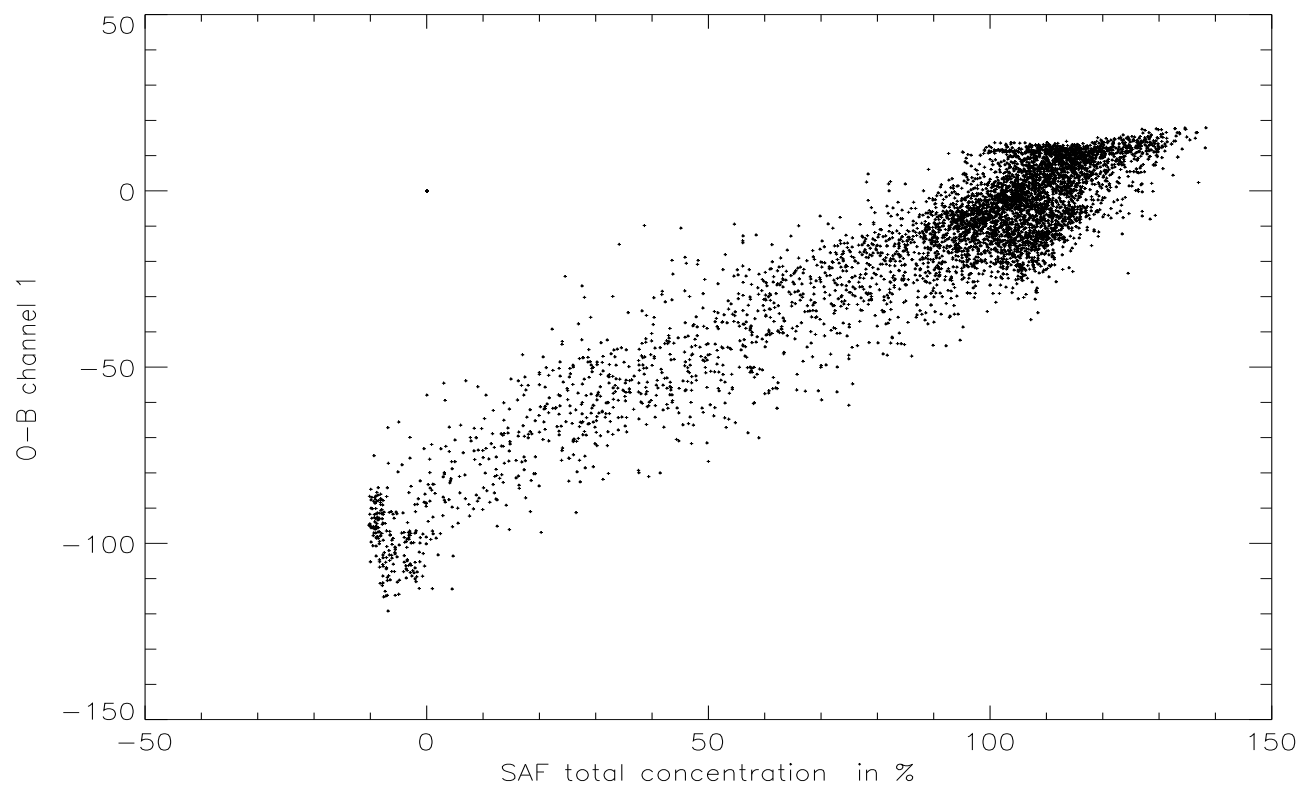
## Overview - NWP assimilation activities

- Goal: Improve utilization of sounding data over the Arctic
- Arctic is a data sparse area - higher potential for impact of satellite observations
- SMHI: AMSU-B moisture data,  
*met.no: AMSU-A temperature data*
- Improve use of lower tropospheric channels by ice surface emissivity modelling using prior ice information in forward model
- Set up HIRLAM 3D-VAR with a system for this. Perform impact studies.



# Simple emissivity predictors

- Previous work: Utility of FY and MY ice fractions from OSI-SAF as emissivity predictors in linear relations





## Approach - surface emissivity

- Start with simple approach
- Later in project more advanced emissivity models for the temperature sounding channels (outcome of other work package)

## Quality control, cloud contamination

- Temperature and moisture data may be contaminated by the presence of clouds
- A strategy for handling this will be developed



## Status - WP 2.1 “Prepare NWP activities”

Delivery of NWP fields for use by project partners (2.1.1):

- Code and script to extract 2 years (2003-2004) of NWP data implemented
- Deliverable 2.2.1 report sent to coordinator

Extracts data from HIRLAM 20 of 6hrs forecasts:

- Total cloud liquid water
- Total column water vapour (“precipitable water”)
- 2 m temperature
- 10 m wind
- Precip last 6 hrs (New - Included after request)

4 analyses daily (00, 06, 12, 18 UTC)



## WP 2.1 “Prepare NWP activities” (cont.)

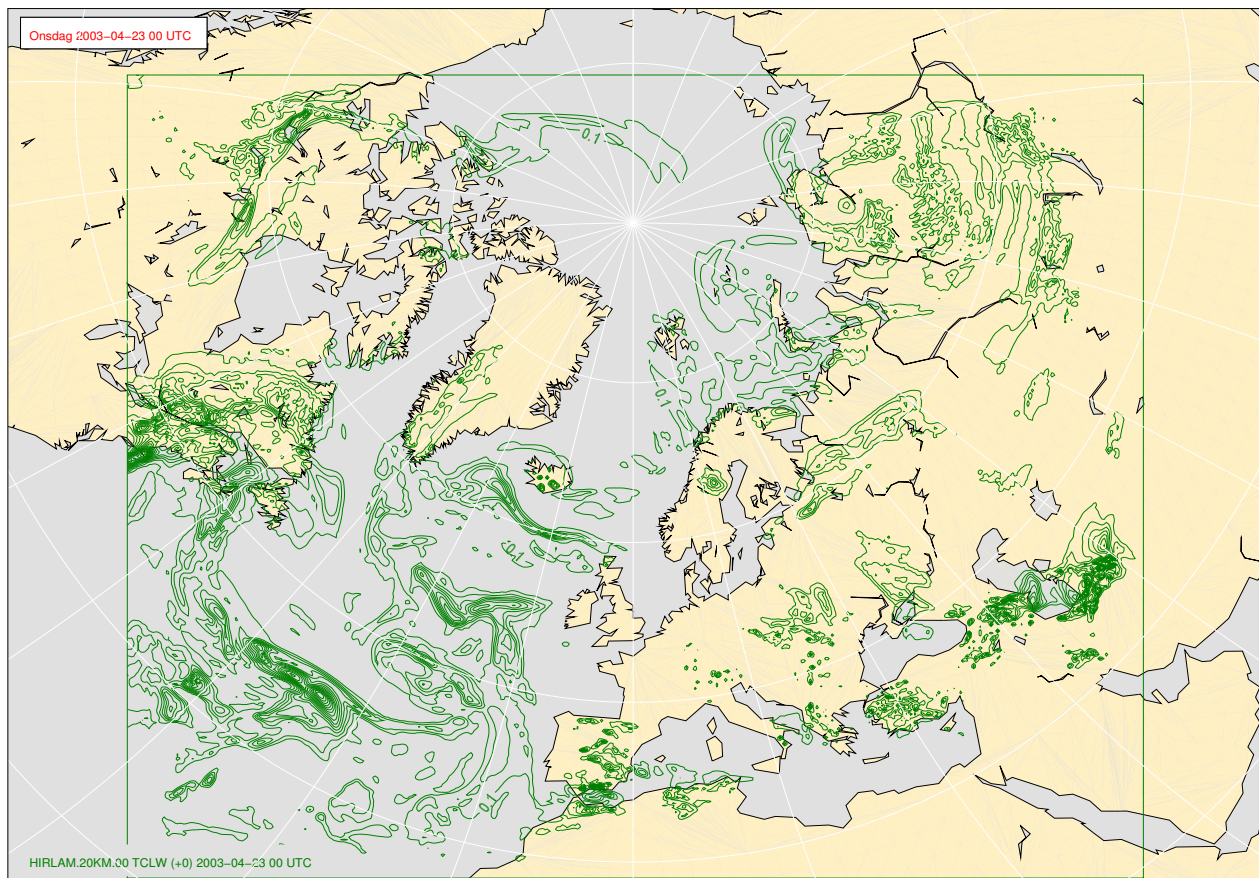
Delivery of NWP fields for use by project partners (2.1.1):

- Data format etc documented in deliverable report
- Full files of HIRLAM output fields being collected - relevant data will be extracted with program/script
- Remains to extract the data and do the actual production





# HIRLAM 20km grid area





## Output of NWP fields

- One daily GRIB file containing the 4 fields (3 scalars, 1 vector) for the four times (00, 06, 12, 18)
- Good, open GRIB documentation and software is available on internet (several sites)
- Approximate file size 6 Mb (can be gzip'ed to ~50%)
- Grid is rotated spherical with meshwidth  $0.2^\circ$
- Simple conversion subroutine (FORTRAN) to/from lat/lon has been prepared (working on single position or array of positions)
- Data up to now in 2003 will be regenerated and can be delivered soon. Will probably generate data monthly (?)
- External access to the dataset in the project?





## Setup of operational data stream for assimilation (NWP)

- Processing chain for near-real-time production of colocation files with AMSU-A level 1c, HIRLAM data and SAF sea ice data (for statistics, experimentation and assimilation) set up
- Input from EUMETSAT ATOVS retransmission
- Much improved NRT coverage of Arctic

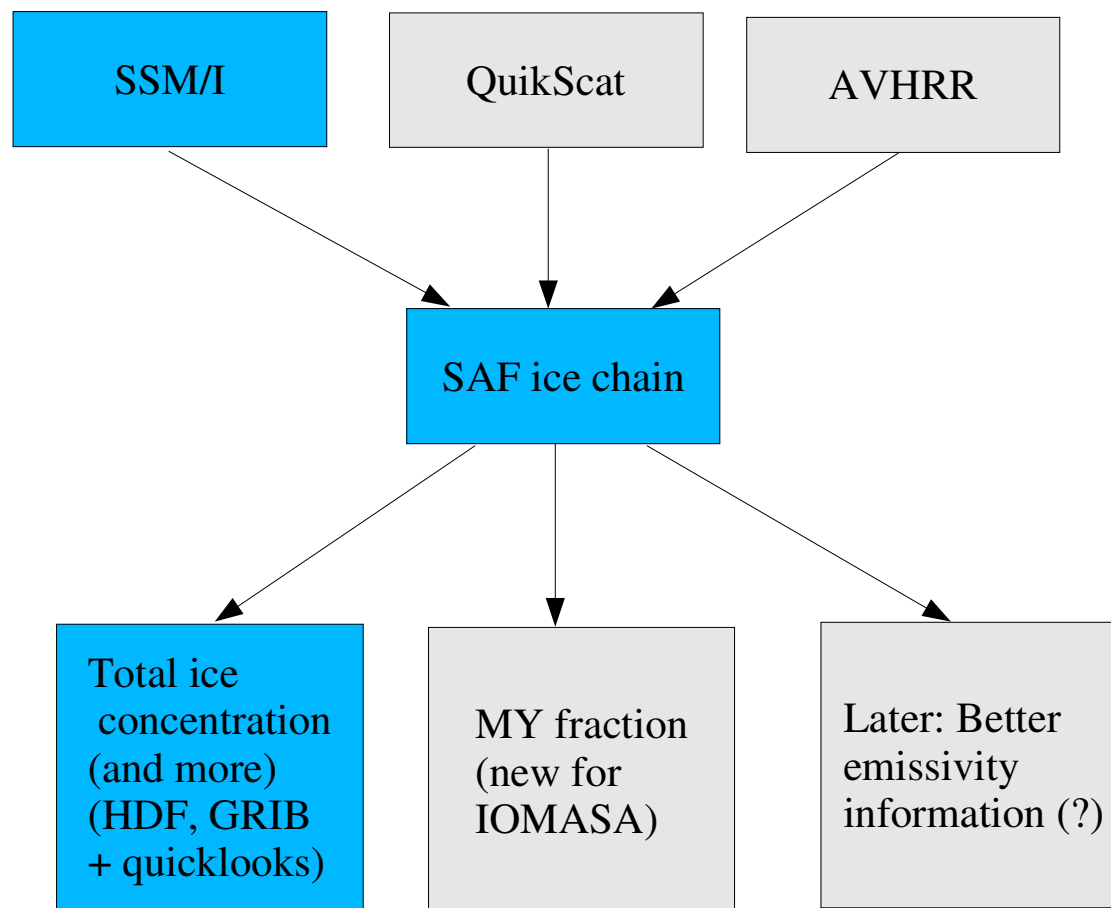


## WP 2.2 Preparation for assimilation (NWP)

- Experimental OSI SAF chain for production of additional ice products for IOMASA is under development (MY ice fraction is not operational)
- Subroutine to import SAF ice data at AMSU footprints
- Will be basis for production of statistics for AMSU observation vs forward modelled observations from HIRLAM fields (RTTOV-7)
- Statistics will aid in developing emissivity formulation for AMSU-A channels
- Will also aid in quality control formulation

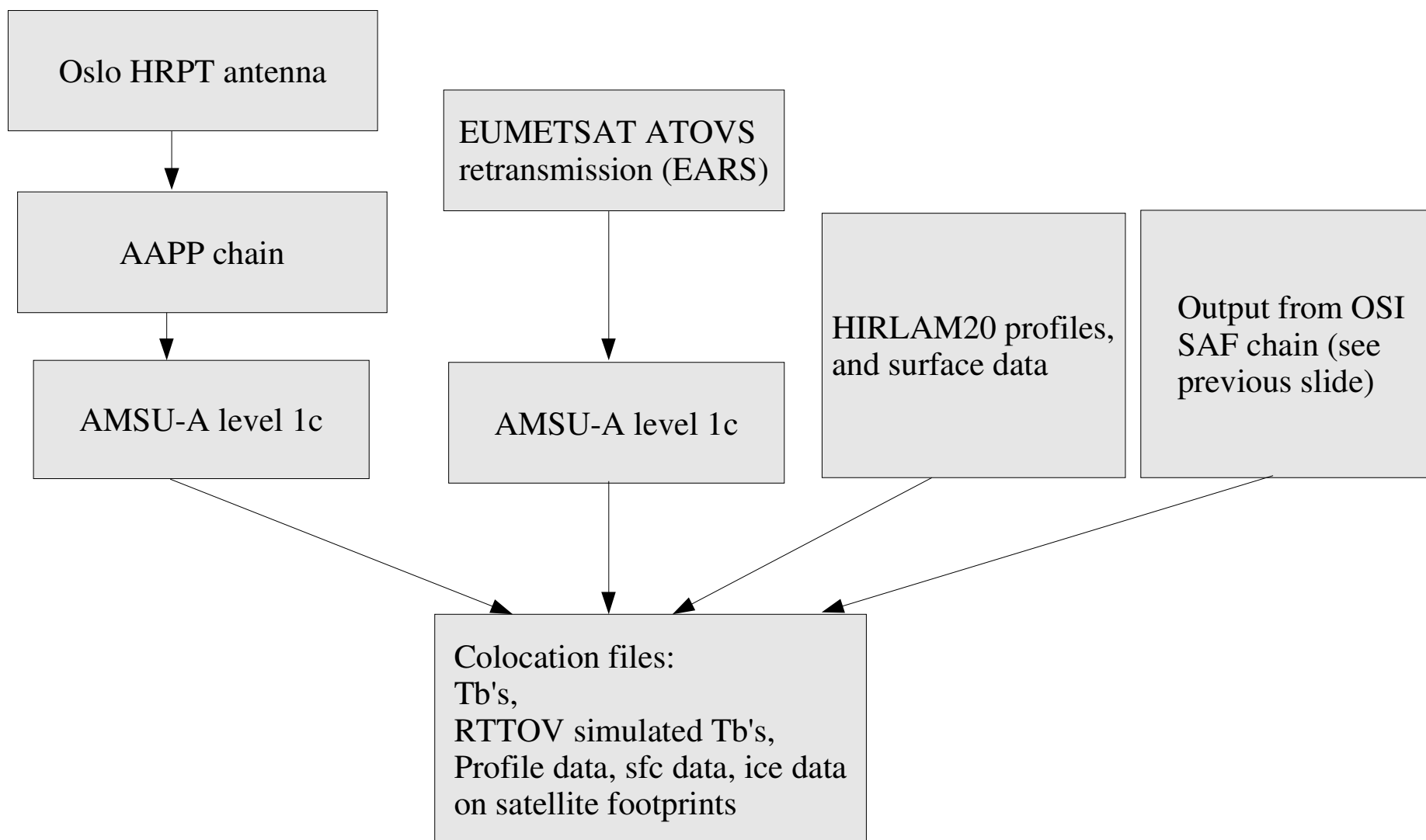


# SAF chain (additional experimental items)

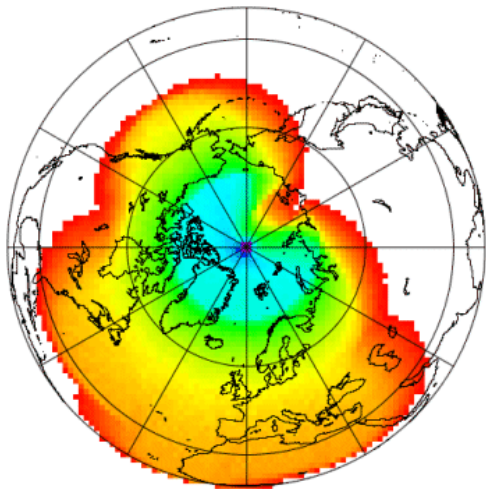




# AMSU-A collocation chain



# EARS (EUMETSAT ATOVS retransmission service)



Number of passes



- 3 reception stations operational (Greenland, Canary Islands, Tromsø, Canadian stations), availability within 30 minutes (?)
- Reception facilities installed and AMSU-A level 1c files received at met.no
- Interface developed