

BUFR and NetCDF

- GEMS should have a harmonised data format for chemical composition observation data
- Both Extended BUFR and NetCDF need further harmonisation
- Extended BUFR should allow for
 - better Metadata identification and
 - additional components/units (collaboration with WMO)
- NetCDF needs definition of a common convention for GEMS

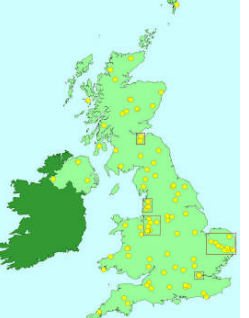
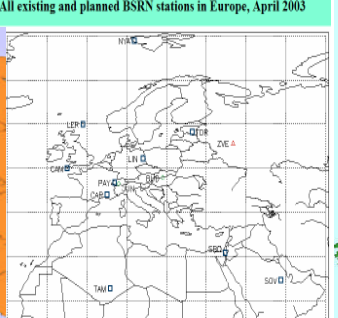
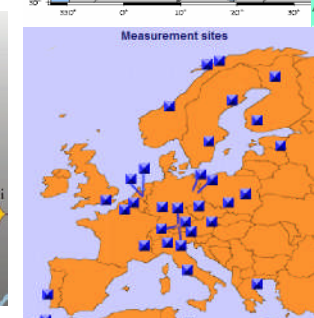
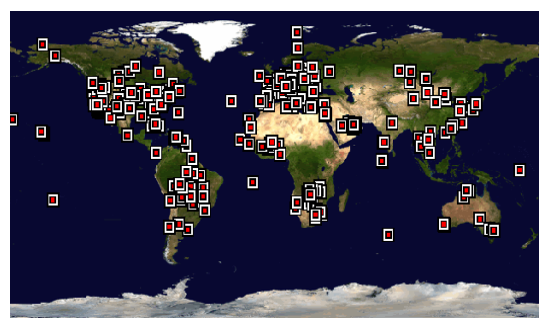
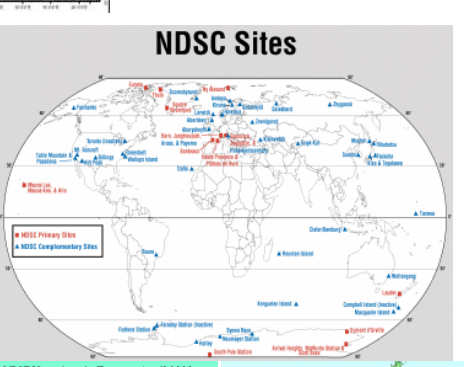
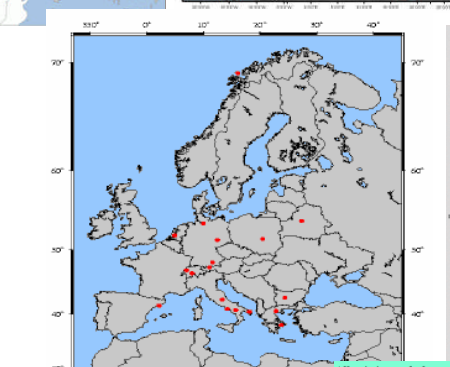
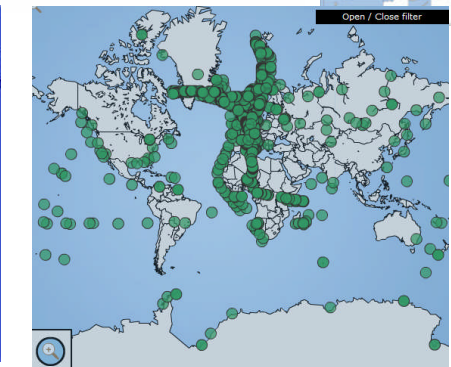
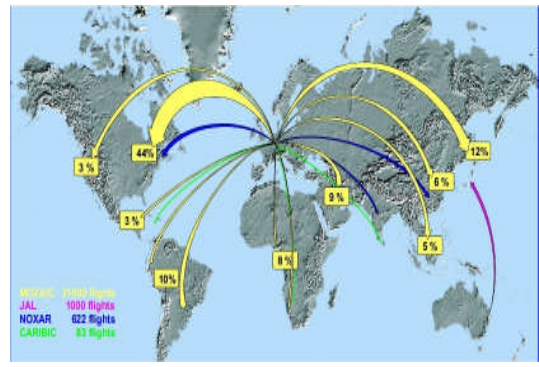
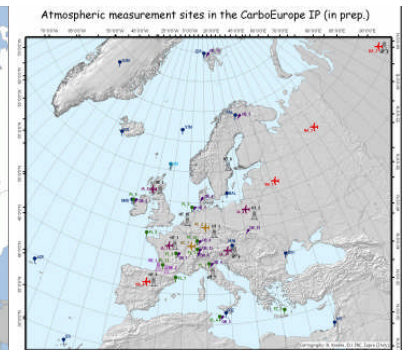
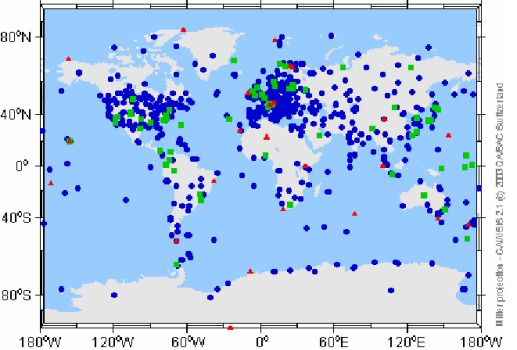
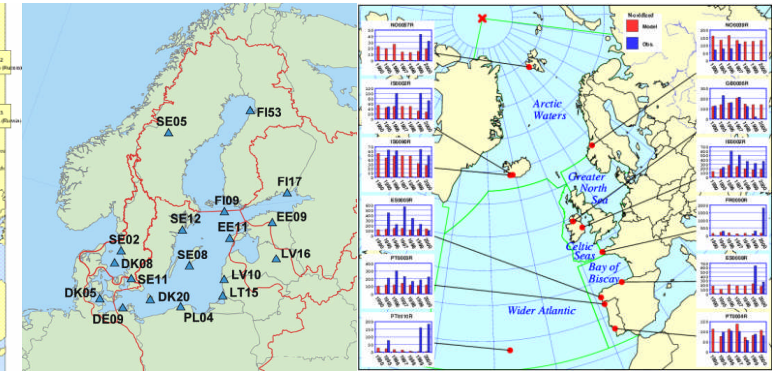
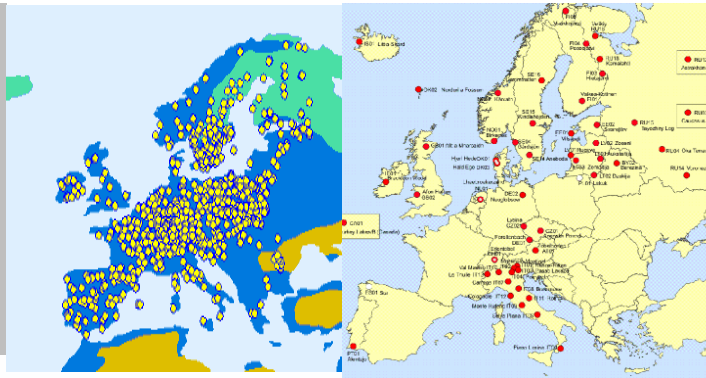
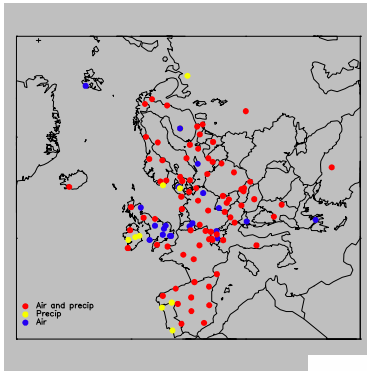
BUFR and NetCDF

Proposal

- We use Extended BUFR for storage in ECMWF AQ databases,
 - both the data assimilation data base and
 - the verification database
- and secure the existence of conversion tools between Extended BUFR and NetCDF (GEMS convention)

GEMS validation of chemical compounds

- GEMS should have a **common database** for all chemical components
 - AER, GRG and RAQ should share the same verification database
 - The database should be at ECMWF
 - Database should be searchable and available through web browser
 - ECMWF will develop common visualisation and data extraction tools
- GEMS should adopt **common skill score criteria** for model evaluation for AER, GRG and RAQ
 - AER, GRG and RAQ should share common validation tools



All existing and planned BSRN stations in Europe, April 2003

Organising common use of observations

- All modellers download data from an agreed list of data centres
 - Advantage: Easy to set up
 - Drawback: Lot of work and duplication of work for model groups
- All needed data are downloaded to a central archive “SNAPSHOT”
 - Advantage: Easy to find data
 - Disadvantage: Data may become outdated. Little control of metadata and data formats
- Virtual database with data accessed through common protocols (API)
 - Advantage: Easy to use data. More control of metadata. Data updated directly from data providers
 - Disadvantage: More work for holder of data archive.

GEMS Snapshot Validation Database – RAQ 2003 (can be extended)

Data origin	Components	Temporal res.	QAQC
EMEP OSPAR HELCOM	O3, NO2, HNO3, SO2, SO4, NO3, NH3+NH4, wet deposition of SO _x , NO _x , NH _x , PM2.5, PM10	Hourly, daily	Strict QA/QC
EEA Airbase	O3, NO2, SO2, PM2.5, PM10	Hourly, daily	Variable
NRT data from national agencies	O3, NO2, SO2, PM10, PM2.5	Hourly	Not as NRT
MOZAIC	CO, O3	Hourly	Good O3, CO (for AQ)

Satellite retrievals

GEMS Snapshot Validation Database – RAQ 2003
 (can be extended in co-operation with AER & GRG)

Data type	availability	QA/QC	origin
NO2 trop. col			KNMI, IFE Uni Bremen, DLD-DFD, IUP Uni Heidelberg
GOME	NRT (spatially limited since July 2003)	QA/QC, but ongoing maturing	
SCIAMACHY	partly NRT	QA/QC, but ongoing maturing	
GOME 2	presumably NRT		
SCIAMACHY CO, HCHO, SO2, CH4 trop. col.	partly NRT (?)		KNMI, IFE Uni Bremen, IUP Uni Heidelberg (?)
OMI O3, NO2	NRT aspired		KNMI
MOPITT CO	weeks	yes	NASA
MIPAS O3,HNO3 profiles	offline	yes	FZK-IMK ESA