



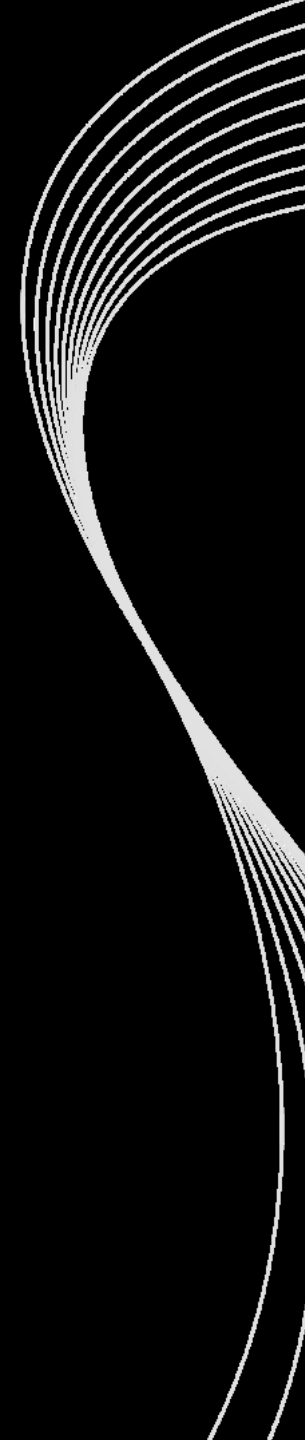
# Data access at FMI

J.Pulliainen, M. Salminen, Finnish Meteorological Institute (FMI)



# Distribution channels available at FMI

- Sodankylä archive (LITDB)
- FTP site: <http://litdb.fmi.fi/> (ARC database)
  - Erdas Apollo <http://erdas-apollo.fmi.fi/apollo-portal/>
  - EOxServer
    - Application and framework for presenting Earth Observation (EO) data and metadata via different Web Services
    - Open source software written in Python (specified by the Open Geospatial Consortium (OGC))
- The prototype snow dataset for ERA-CLIM2
  - Will consist of 2 files (distributed snow courses and point-wise snow depth)
  - Total size only ~20 MB



# Erdas Apollo geospatial portal (FMI)



FMI Arctic Research Centre Geospatial Portal

Map Content +  
 Search ERDAS APOLLO Catalog +  
 Browse ERDAS APOLLO Catalog -

- Services
- Vectors (WFS)
- Maps (WMS)
- Coverages (WCS)
- Coverage Catalog
- ROOT
- BALMON
- GlobSnow
- snow\_water\_equivalent
- daily
- monthly
- HSAF
- SnowCarbo
- SSPI

Refresh

Clip-Zip-Ship +  
 Analyses +  
 Settings +

Data Sources Tools Selection Edit Time Measurements Authentication

Home Info Search Log 1: 23552520 Current browser language ?

N: 74°38'2.19" E: 5°2'9.91"

Web browser

GlobSnow\_SWE\_L3B\_monthly\_198201\_v1.3

### Metadata

**Name** GlobSnow\_SWE\_L3B\_monthly\_198201\_v1.3  
**Title** GlobSnow\_SWE\_L3B\_monthly\_198201\_v1.3.tif  
**Abstract** GLOBSNOW FPS Snow Water Equivalent (0.1 deg)  
**Tags** Snow Water Equivalent (SWE), Snow Water Equivalent, Meteorological geographical features  
**Node Type**  
**Registration Date** 2013-10-06T02:37:45Z  
**Owner** admin

### Temporal & Spatial

**Temporal Extent** 1982-01-01T00:00:00Z/1982-01-31T23:59:00Z  
**Lat/Lon bounding box**  
**Native bounding box** -180, 0, 180, 90  
**Native SRS** EPSG:4326  
**X Resolution** 0.10000000000000002  
**X Size** 3600  
**Y Resolution** 0.1  
**Y Size** 900  
**Georectified** Yes  
**Georeferenced** Yes  
**Pixel Space** No

### Bands Description

GlobSnow snow\_water\_equivalent monthly

Add to map Metadata Add to Clip-Zip-Ship Download Zoom Open with...

monthly GlobSnow\_SW... GlobSnow\_SW... GlobSnow\_SW... GlobSnow\_SW... GlobSnow\_SW... GlobSnow\_SW... GlobSnow\_SW... GlobSnow\_SW... GlobSnow\_SW... GlobSnow\_SW...

Select All Page 1 of 58 10 Items per page



# FMI Arctic Research FTP Database

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METEOROLOGISKA INSTITUTET  
FINNISH METEOROLOGICAL INSTITUTE

**DATABASE OF SODANKYLA AND PALLAS MEASUREMENTS**

HOME

SYNOPSIS DATA

CAMERAS

SOUNDINGS

COLUMN DATA

RADIATION DATA

AEROSOL

MICROMETEOROLOGICAL MAST

UPPER ATMOSPHERIC DATA

PALLAS

SOIL

SNOW

HIRLAM

CAMPAING, FUVIRC

CAMPAING, NOSREX

CAMPAING, SNORTEX

SYNOPSIS DATA

**SYNOPSIS OBSERVATIONS / AUTOMATIC WEATHER STATION (AWS)**

PEATLAND AUTOMATIC WEATHER STATION (AWS)

MANUAL SYNOPSIS OBSERVATIONS, DAILY VALUES

MANUAL SYNOPSIS OBSERVATIONS

**AWS:**

<input type="checkbox"/> BOTTOM OF THE CLOUD LAYER	<input type="checkbox"/> BOTTOM OF THE CLOUD LAYER, PREVIOUS 20 MIN
<input type="checkbox"/> BOTTOM OF THE 2ND CLOUD LAYER, PREV. 20 MIN	<input type="checkbox"/> BOTTOM OF THE 3RD CLOUD LAYER, PREV. 20 MIN
<input type="checkbox"/> BOTTOM OF THE 4TH CLOUD LAYER, PREV. 20 MIN	<input type="checkbox"/> AMOUNT OF LOW CLOUDS
<input type="checkbox"/> AMOUNT OF 2ND CLOUD LAYER	<input type="checkbox"/> AMOUNT OF 3RD CLOUD LAYER
<input type="checkbox"/> AMOUNT OF 4TH CLOUD LAYER	<input type="checkbox"/> WIND DIRECTION 10 MIN AVERAGE
<input type="checkbox"/> WIND DIRECTION, INSTANT VALUE	<input type="checkbox"/> RELATIVE HUMIDITY
<input type="checkbox"/> GROUND PRESSURE	<input type="checkbox"/> PRESSURE CONVERTED TO SEA LEVEL
<input type="checkbox"/> PRECIPITATION INTENSITY 10 MIN AVERAGE	<input type="checkbox"/> PRECIPITATION 1 H CUMULATIVE SUM
<input type="checkbox"/> SNOW DEPTH	<input type="checkbox"/> SNOW DEPTH, 10 MIN STANDARD DEVIATION
<input type="checkbox"/> SNOW DEPTH 10 MIN AVERAGE	<input type="checkbox"/> SNOW QUALITY NUMBER
<input type="checkbox"/> TEMPERATURE AT 2M	<input type="checkbox"/> TEMPERATURE AT GROUND
<input type="checkbox"/> DEW POINT TEMPERATURE	<input type="checkbox"/> VISIBILITY 10 MIN, CURRENT VALUE
<input type="checkbox"/> VISIBILITY 10 MIN, PREVIOUS VALUE	<input type="checkbox"/> PRECIPITATION INTENSITY 10 MIN AVERAGE
<input type="checkbox"/> PREVAILING WEATHER CODE	<input type="checkbox"/> WIND SPEED 10 MIN AVERAGE
<input type="checkbox"/> MAXIMUM WIND SPEED DURING 10 MIN PERIOD	<input type="checkbox"/> WIND SPEED INSTANT
<input type="checkbox"/> MILOS ERROR CODE 1	<input type="checkbox"/> MILOS ERROR CODE 2

**METADATA FILE**

**MANUAL SYNOPSIS OBSERVATIONS:**

<input type="checkbox"/> TYPE OF HIGH CLOUDS	<input type="checkbox"/> STATE OF GROUND.
<input type="checkbox"/> TYPE OF MIDDLE CLOUDS	<input type="checkbox"/> AMOUNT OF LOWEST CLOUDS
<input type="checkbox"/> HEIGHT OF LOWEST CLOUDS	<input type="checkbox"/> AIR PRESSURE AT SEA LEVEL
<input type="checkbox"/> TOTAL CLOUDINESS	<input type="checkbox"/> AIR TEMPERATURE
<input type="checkbox"/> RELATIVE HUMIDITY	<input type="checkbox"/> WET BULB TEMPERATURE
<input type="checkbox"/> DEW POINT TEMPERATURE	<input type="checkbox"/> MANUAL PAST WEATHER W1
<input type="checkbox"/> VISIBILITY	<input type="checkbox"/> WIND DIRECTION 10 MIN AVERAGE
<input type="checkbox"/> MANUAL PAST WEATHER W2	<input type="checkbox"/> WEATHER SYMBOL 2
<input type="checkbox"/> WEATHER SYMBOL 1	<input type="checkbox"/> WEATHER SYMBOL 4
<input type="checkbox"/> WEATHER SYMBOL 3	<input type="checkbox"/> WEATHER SYMBOL 6
<input type="checkbox"/> WEATHER SYMBOL 5	<input type="checkbox"/> WW CODE/SYNOP
<input type="checkbox"/> WIND SPEED 10 MIN AVERAGE	<input type="checkbox"/> TIME OF MAX WIND SPEED DURING THE LAST 3 HOURS
<input type="checkbox"/> MAX WIND SPEED DURING THE LAST 3 HOURS	

**METADATA FILE**



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FINNISH METEOROLOGICAL INSTITUTE

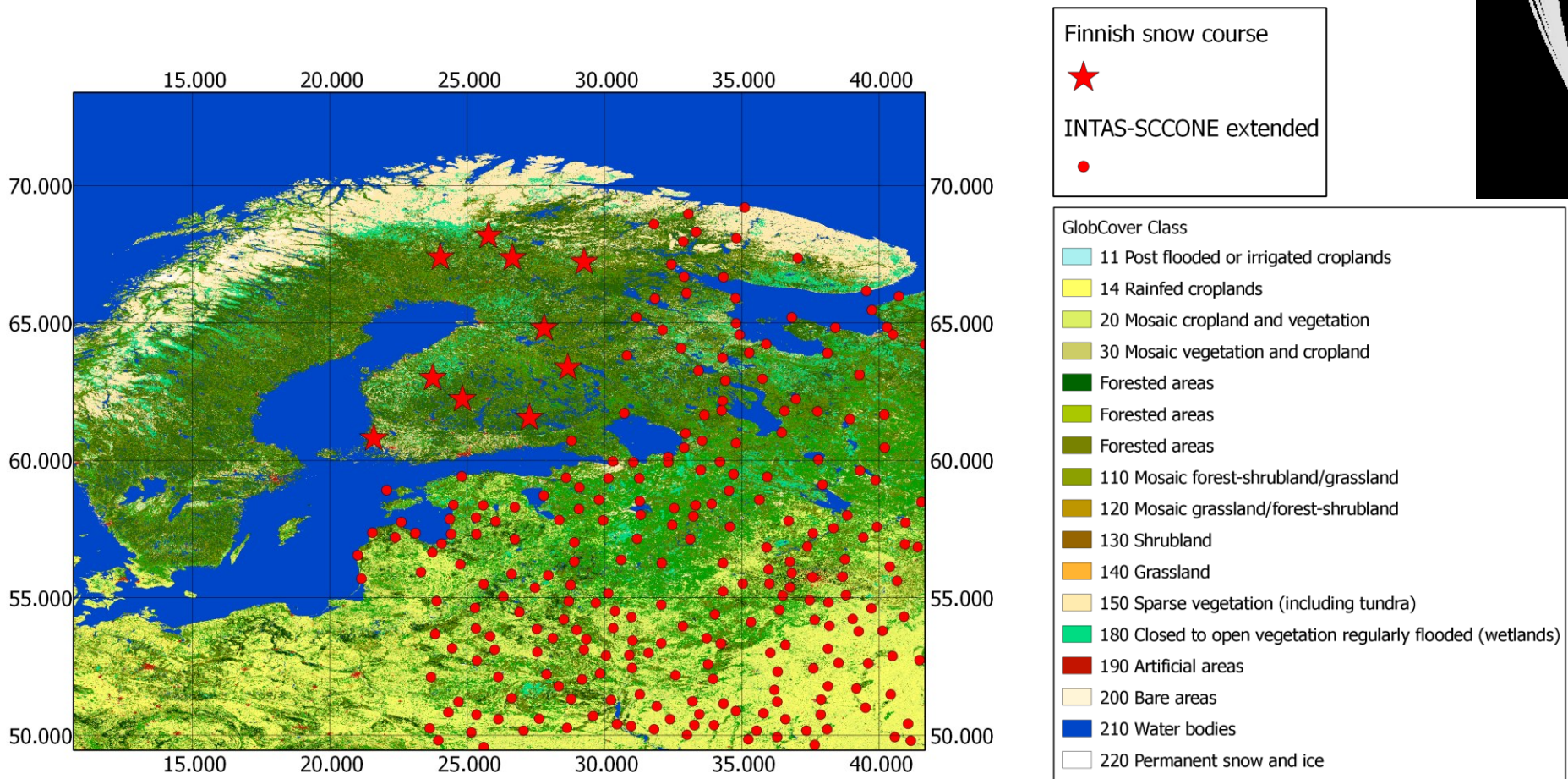
# Prototype snow cover dataset in development for ERA-CLIM2

J.Pulliainen, M. Salminen, Finnish Meteorological Institute (FMI)



# Snow course observation spatial coverage

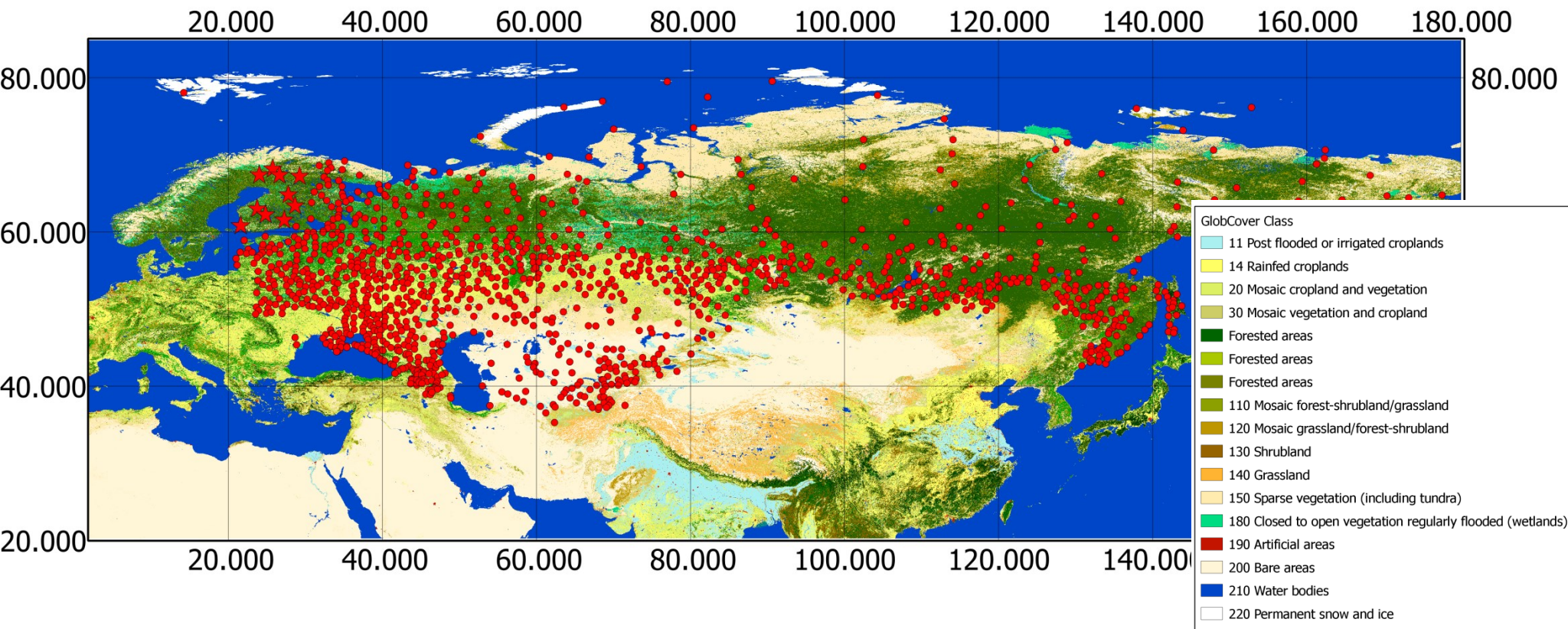
- Distributed snow course observations from Finland and North-West Russia on Snow Water Equivalent (SWE)





# Snow courses at WMO stations and Finland

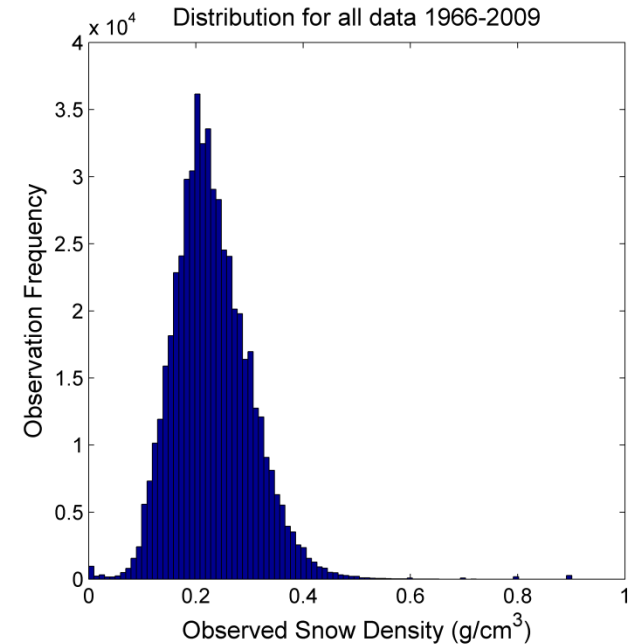
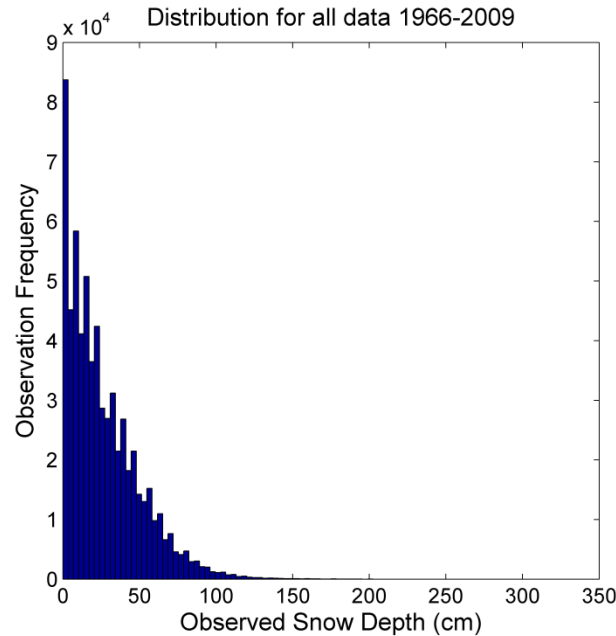
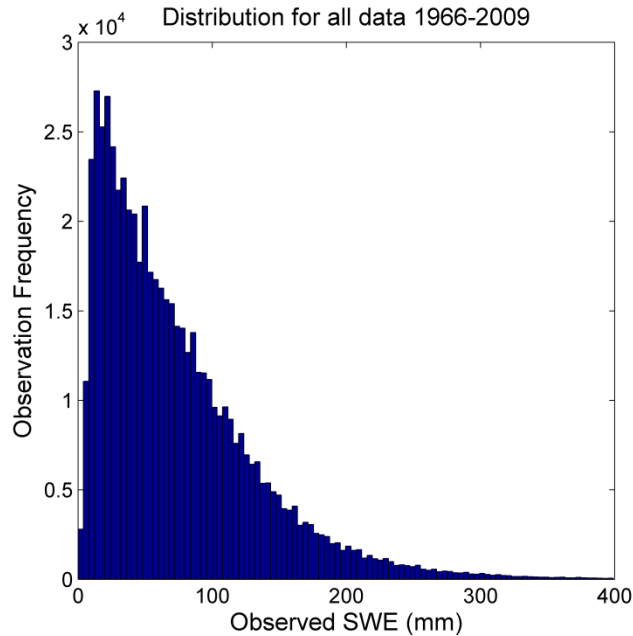
- Distributed snow course observations from Eurasia on Snow Water Equivalent (SWE), Snow Depth (SD) and density





# Prototype SWE dataset: Distribution for all data 1966-2009

- Total number of WMO weather stations over 1300
- Time period 1966-2009 (10 stations in Finland until 2014)
- Total number of observations over 700 000
- Variables
  - Snow Water Equivalent (SWE)
  - Snow Dept (SD)
  - Snow Density



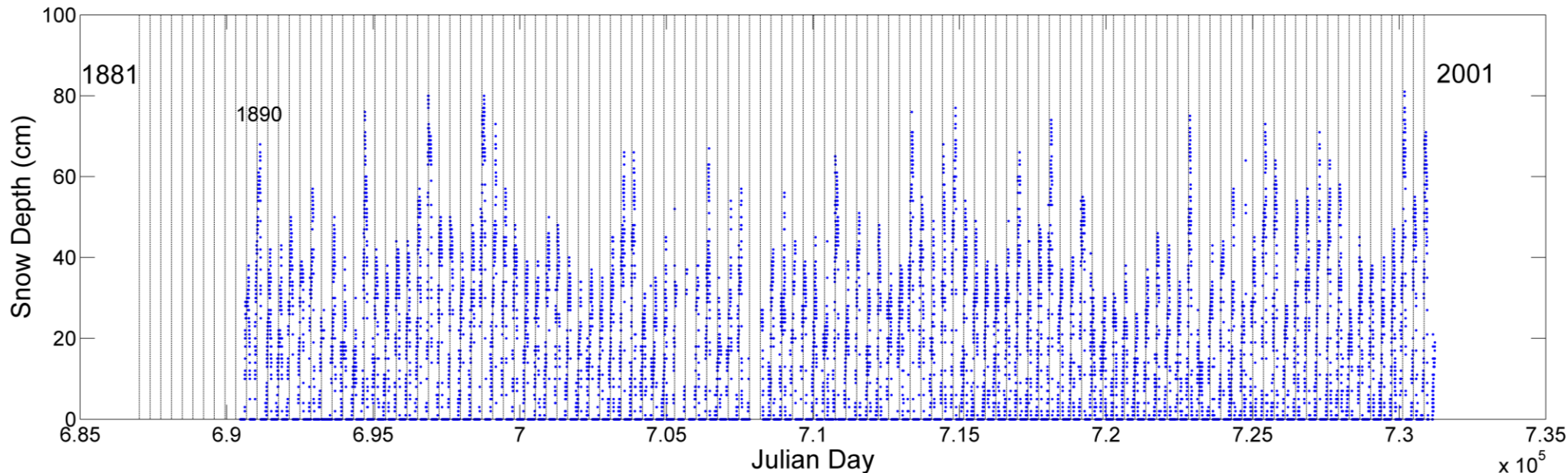




# Prototype point-wise SD dataset: Distribution for all data 1881-2001

- Total number of WMO weather stations 223
- Total number of observations over 5 million
- Variables
  - Snow Dept (SD)
  - Fractional Snow Cover information
- Data origin: Former Soviet Union (FSU)
- Currently archived in FMI database

SNOW OBSERVATION SITE 28440





# Distributed snow courses

Course	LAT	LON	DOY	SWE	RHO	SD	Julian Day	Year

- Code -99 for missing data
- Separate metadata file
- DOY and Julian day included
- WGS-84 latitude and longitude in decimal degrees



# Point-wise SD

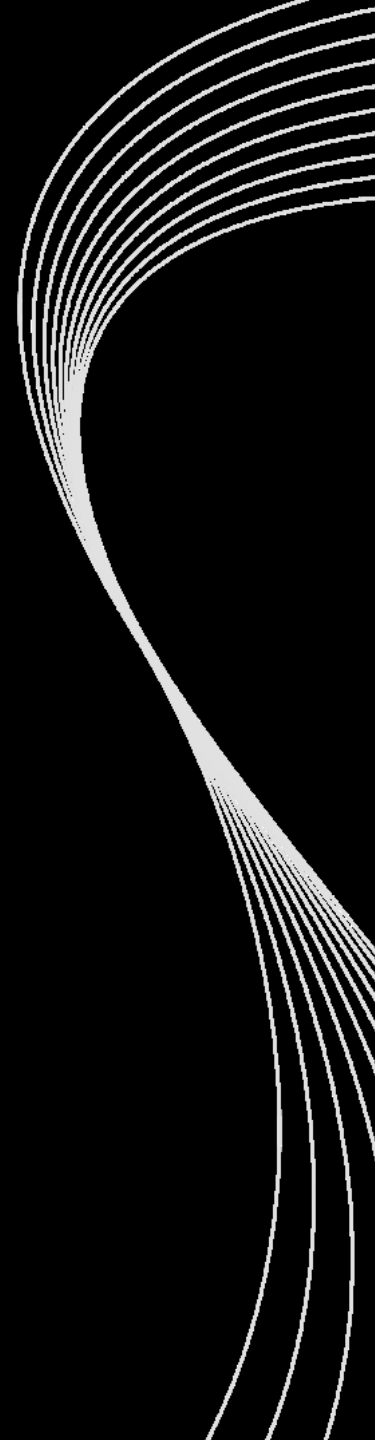
Station	LAT	LON	DOY	SD	FSC	SD Flag	Julian Day	Year

- Code -99 for missing data
- Separate metadata file
- DOY and Julian day included
- WGS-84 latitude and longitude in decimal degrees



# Prototype data set outline

- Additional columns will be added
  - Land use (GlobCover)
  - Topography
  - Quality flags etc.
  - Data source (INTAS-SCCONE etc.)
  - Metadata in separate files





# Way forward

- Extension of regional coverage
  - North America
  - Europe
  - Mountains