# Highly Resolved Precipitation Forcing for ELDAS

## European Land Data Assimilation System to predict floods and droughts


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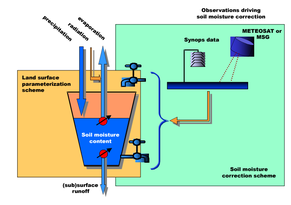



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## Precipitation in the Numerical Weather Prediction

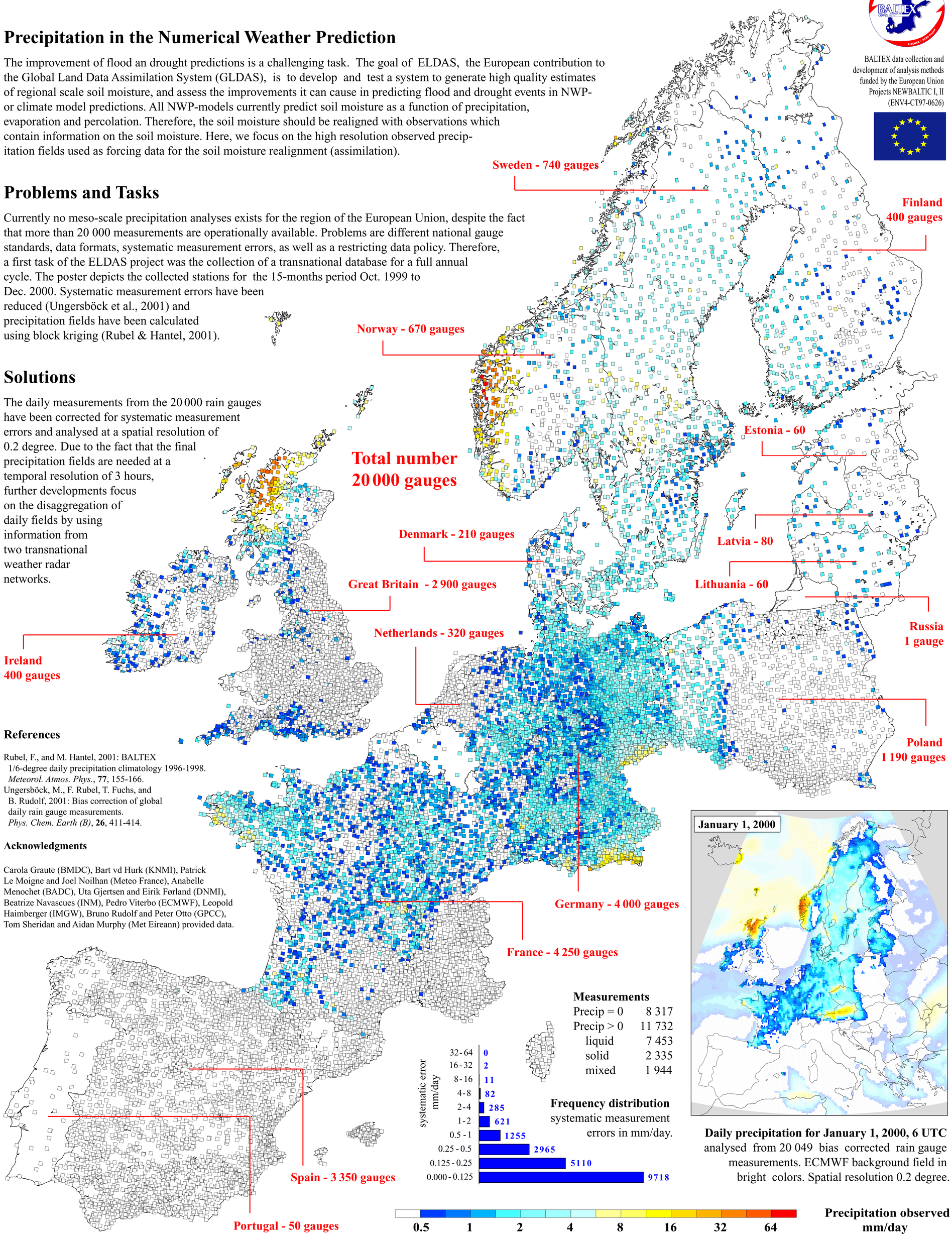
The improvement of flood an drought predictions is a challenging task. The goal of ELDAS, the European contribution to the Global Land Data Assimilation System (GLDAS), is to develop and test a system to generate high quality estimates of regional scale soil moisture, and assess the improvements it can cause in predicting flood and drought events in NWP- or climate model predictions. All NWP-models currently predict soil moisture as a function of precipitation, evaporation and percolation. Therefore, the soil moisture should be realigned with observations which contain information on the soil moisture. Here, we focus on the high resolution observed precipitation fields used as forcing data for the soil moisture realignment (assimilation).

## Problems and Tasks

Currently no meso-scale precipitation analyses exists for the region of the European Union, despite the fact that more than 20 000 measurements are operationally available. Problems are different national gauge standards, data formats, systematic measurement errors, as well as a restricting data policy. Therefore, a first task of the ELDAS project was the collection of a transnational database for a full annual cycle. The poster depicts the collected stations for the 15-months period Oct. 1999 to Dec. 2000. Systematic measurement errors have been reduced (Ungersböck et al., 2001) and precipitation fields have been calculated using block kriging (Rubel & Hantel, 2001).

## Solutions

The daily measurements from the 20 000 rain gauges have been corrected for systematic measurement errors and analysed at a spatial resolution of 0.2 degree. Due to the fact that the final precipitation fields are needed at a temporal resolution of 3 hours, further developments focus on the disaggregation of daily fields by using information from two transnational weather radar networks.







**Daily precipitation for January 1, 2000, 6 UTC** analysed from 20 049 bias corrected rain gauge measurements. ECMWF background field in bright colors. Spatial resolution 0.2 degree.




**Frequency distribution** systematic measurement errors in mm/day.

**Measurements**

| | |
|---|---|
| Precip = 0 | 8 317 |
| Precip > 0 | 11 732 |
| liquid | 7 453 |
| solid | 2 335 |
| mixed | 1 944 |




**Precipitation observed mm/day**

### References


Rubel, F., and M. Hantel, 2001: BALTEX 1/6-degree daily precipitation climatology 1996-1998. *Meteorol. Atmos. Phys.*, **77**, 155-166.

Ungersböck, M., F. Rubel, T. Fuchs, and B. Rudolf, 2001: Bias correction of global daily rain gauge measurements. *Phys. Chem. Earth (B)*, **26**, 411-414.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