

Presentation from the 2011 World Water Week in Stockholm

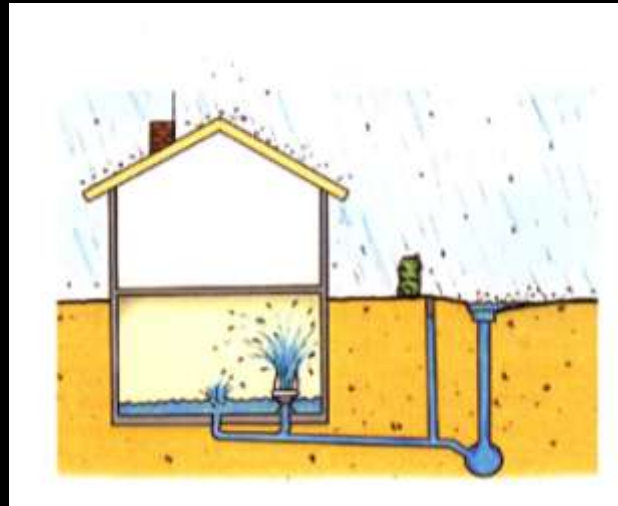
WORLD
in Stockholm,
August 21–27, 2011
WATER
WEEK

www.worldwaterweek.org

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Regional Climate Model (RCM) projections for urban hydrological planning and adaptation: the SUDPLAN project



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Outline

- Climate change and river runoff
- Climate change and urban hydrology
- SUDPLAN: urban climate service
- Common services in SUDPLAN
- Concluding remarks

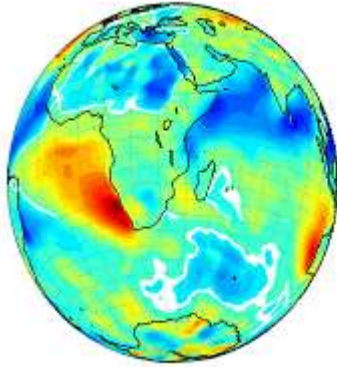
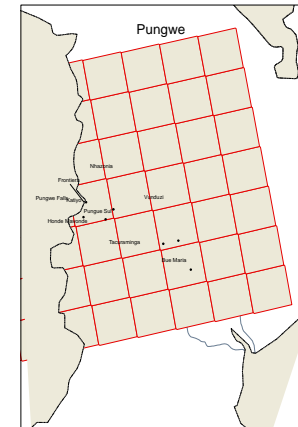
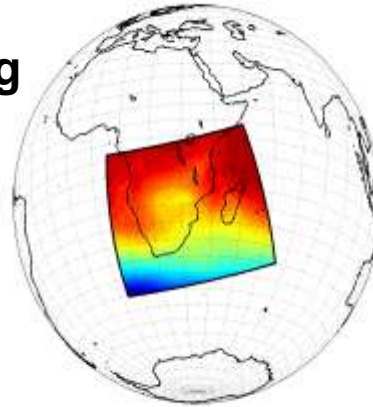
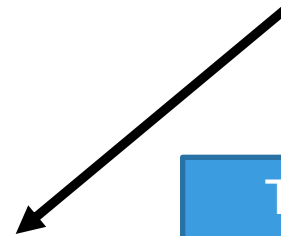
SUDPLAN

Sustainable Urban Development Planner for Climate Change Adaptation

<http://www.smhi.se/sudplan>

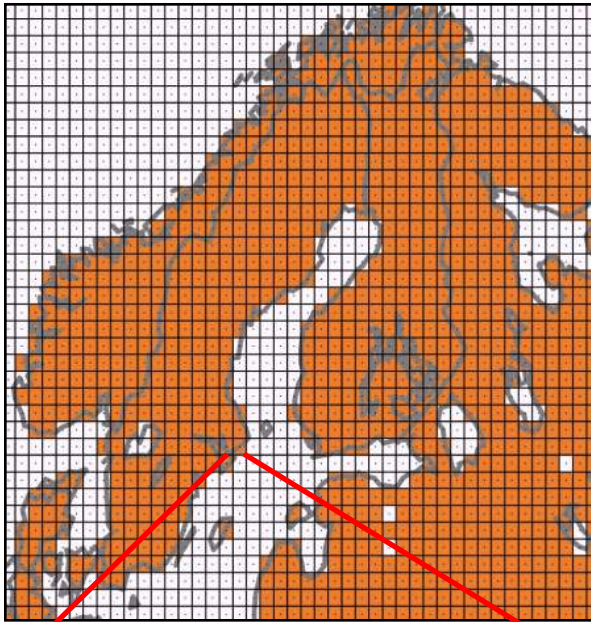


Climate change and river runoff

GCM**Dynamical
downscaling****RCM****Hydrological
modelling****Future runoff,
water resources
and flooding**

The climate model results must be post-processed before the hydrological modelling

Climate change and urban hydrology

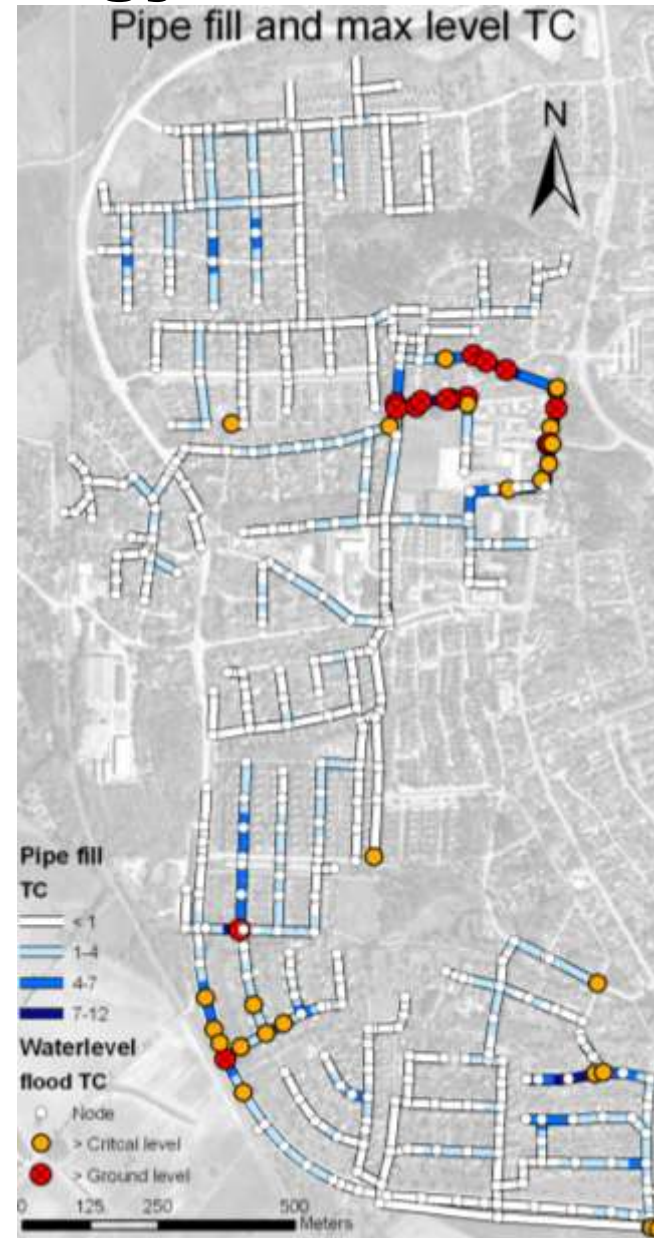


Climate models:
50x50 km (>)
Daily (at best)

Urban models:
1x1 km (~)
Minutes



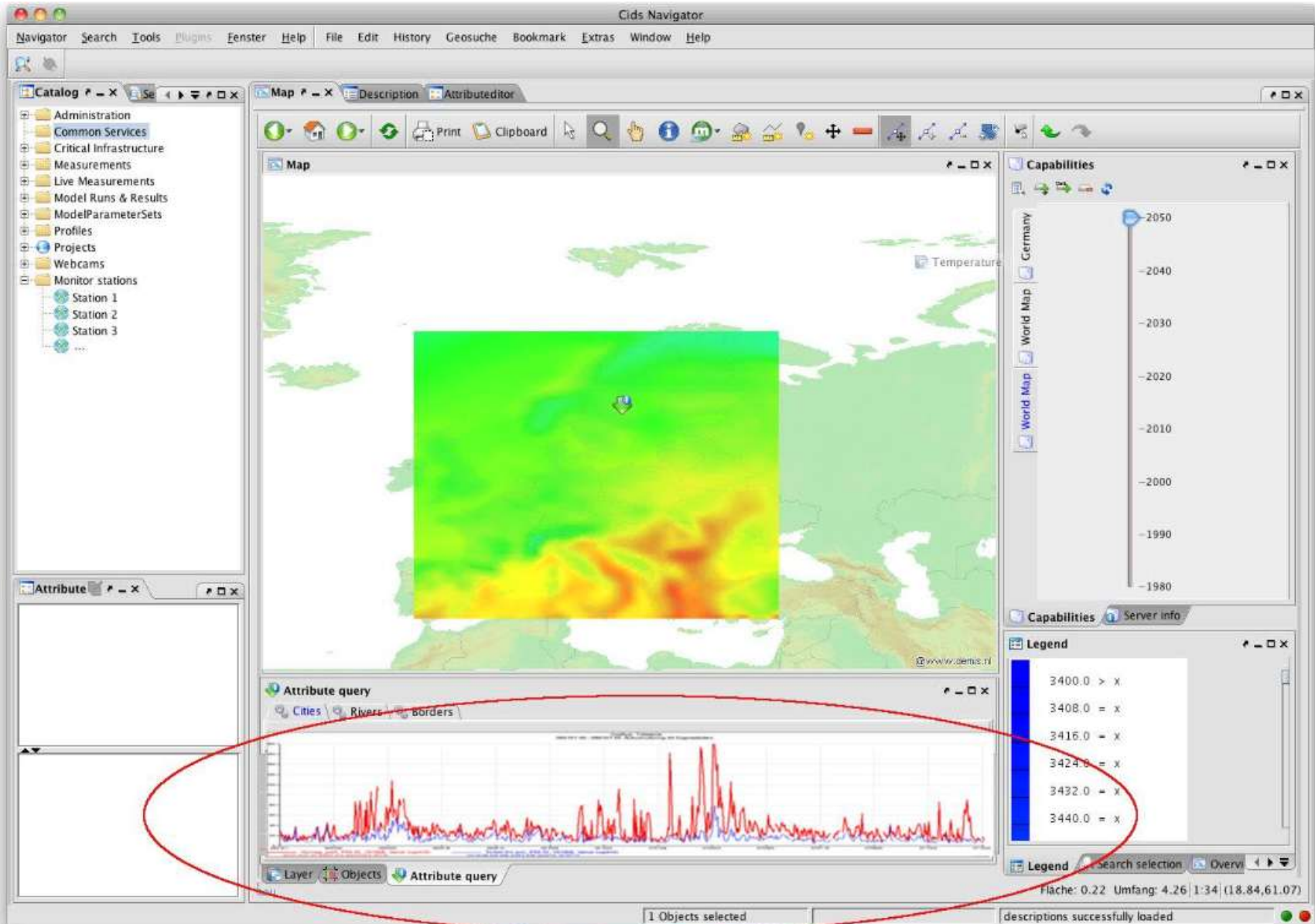
The climate model results must be downscaled to the scale of urban catchments



SUDPLAN: urban climate service

- Web-based decision support for urban planning and design
- Tailor-made data for urban processes and models
- Post-processing of RCM results based on local observations
- Common services:
 1. RCM data and visualisation (precipitation, temperature)
 2. Local intense precipitation downscaling
 3. River runoff downscaling
 - (4. Air quality downscaling)
- An ensemble of high-resolution (30 min / 25 km) RCM projections (with different GCM, emissions, initial state)
- Pan-European scale

RCM data and visualisation



Local precipitation downscaling

The screenshot shows the Cids Navigator software interface. The main window displays a map of Sweden with various cities labeled. A dialog box titled "Start Downscaling" is overlaid on the map, featuring a red bar chart representing precipitation data. The dialog box has a "Start Downscaling" button and a close button. The interface includes a menu bar (Navigator, Search, Tools, Plugins, Fenster, Help, File, Edit, History, Geosuche, Bookmark, Extras, Window, Help), a toolbar with icons for home, refresh, print, clipboard, search, and zoom, and several panels: Catalog (left), Capabilities (right), Layer (bottom), and Legend (bottom right). The Catalog panel shows a tree view of data sources, including Administration, Common Services, Critical Infrastructure, Measurements, Live Measurements, Model Runs & Results, ModelParameterSets, Profiles, Projects, Webcams, Monitor stations, Station 1, Timeseries 1, and Timeseries 2. The Capabilities panel shows a list of capabilities for World Map, Germany, and World Map, including Countries, Earth Image, Coastlines, Waterbodies, Transportation, Borders, Cities, and Airports. The Layer panel shows a list of layers: Cities, Borders, Rivers, Hillshading, and Topography. The Legend panel is currently empty. The status bar at the bottom indicates "1 Objects selected" and "descriptions successfully loaded".

River runoff downscaling

Layer

Layer	Style	Info	Progress / Transparency
utlopp_punkt	Default point	<input type="checkbox"/>	<input type="checkbox"/>
uppstrom	Default polygon style	<input type="checkbox"/>	<input type="checkbox"/>
aro	geoserver style	<input type="checkbox"/>	<input type="checkbox"/>
vattendrag	Sjoar	<input type="checkbox"/>	<input type="checkbox"/>
vattenyor	Små Sjoar	<input type="checkbox"/>	<input type="checkbox"/>
tatort	Swedish Cities	<input type="checkbox"/>	<input type="checkbox"/>
europa	Sverigepolygon med farg för...	<input type="checkbox"/>	<input type="checkbox"/>

1 object selected | Descriptions loaded successfully

Concluding remarks

- 2011: prototype, 2012: up & running
- Related ongoing and future work:
 1. Improving the resolution / processes of RCMs (<10 km)
 2. Collection and analysis of high-resolution precipitation data
 3. Development of warning systems for intense precipitation
- Other future changes (denser cities, aging sewers, etc.) may be at least as important as the climate change



SMHI

URBAN WATER VISION

Visualization of climate change – challenges for city planning

Sunday Aug 21th - Thursday Aug 25th

From 10 am to 5 pm

World Water Week, Stockholm, T-area

Elumenati



www.smhi.se and www.visualiseringcenter.se