

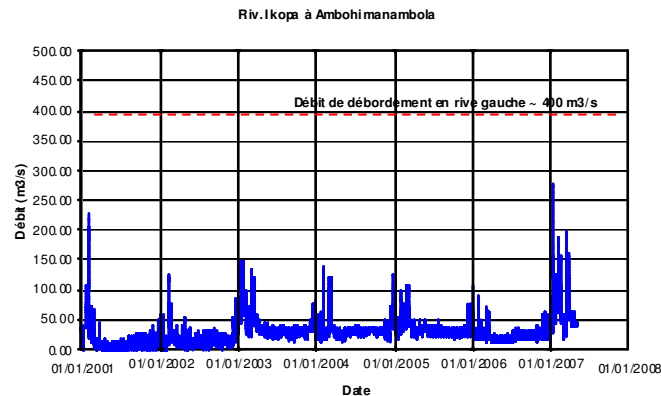
***Applied Geography of the Tropics
and Subtropics***



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Global Models and Scenarios (IPCC 2007...)



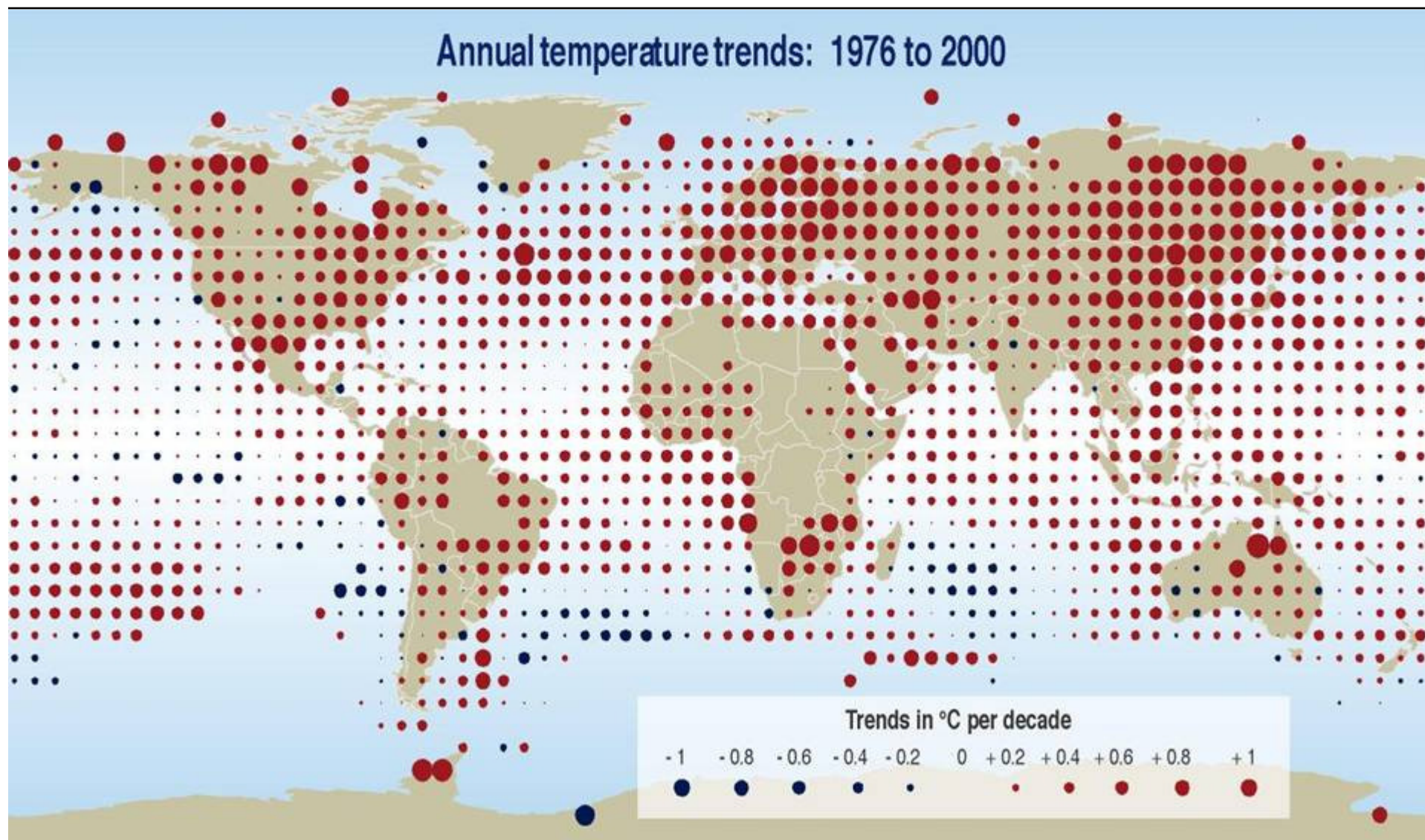
Annual temperature trends

1901-2000

1910-1945

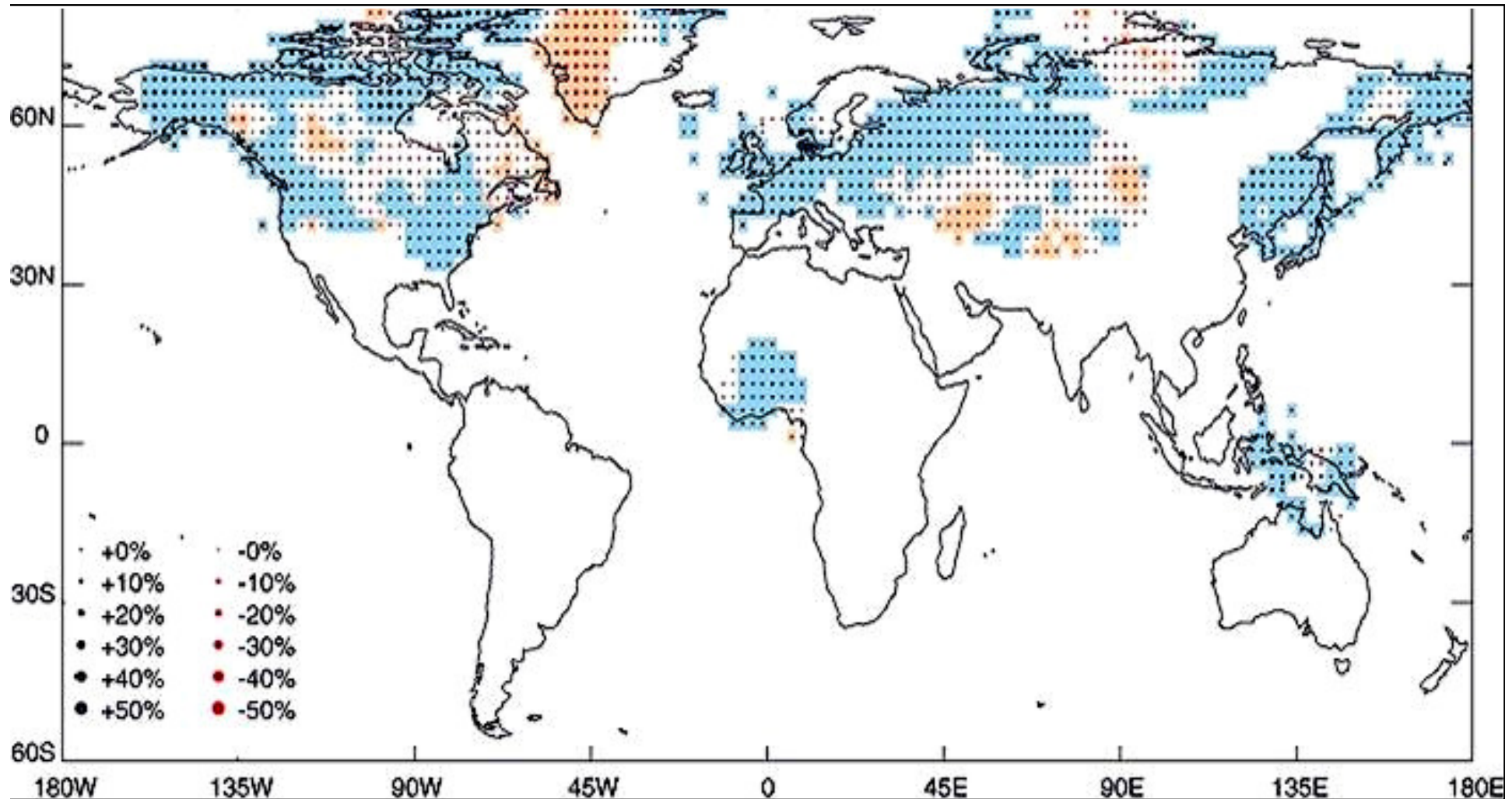
1946-1975

Quelle:
http://www.grida.no/dimate/ipcc_tar/wg1/057.htm



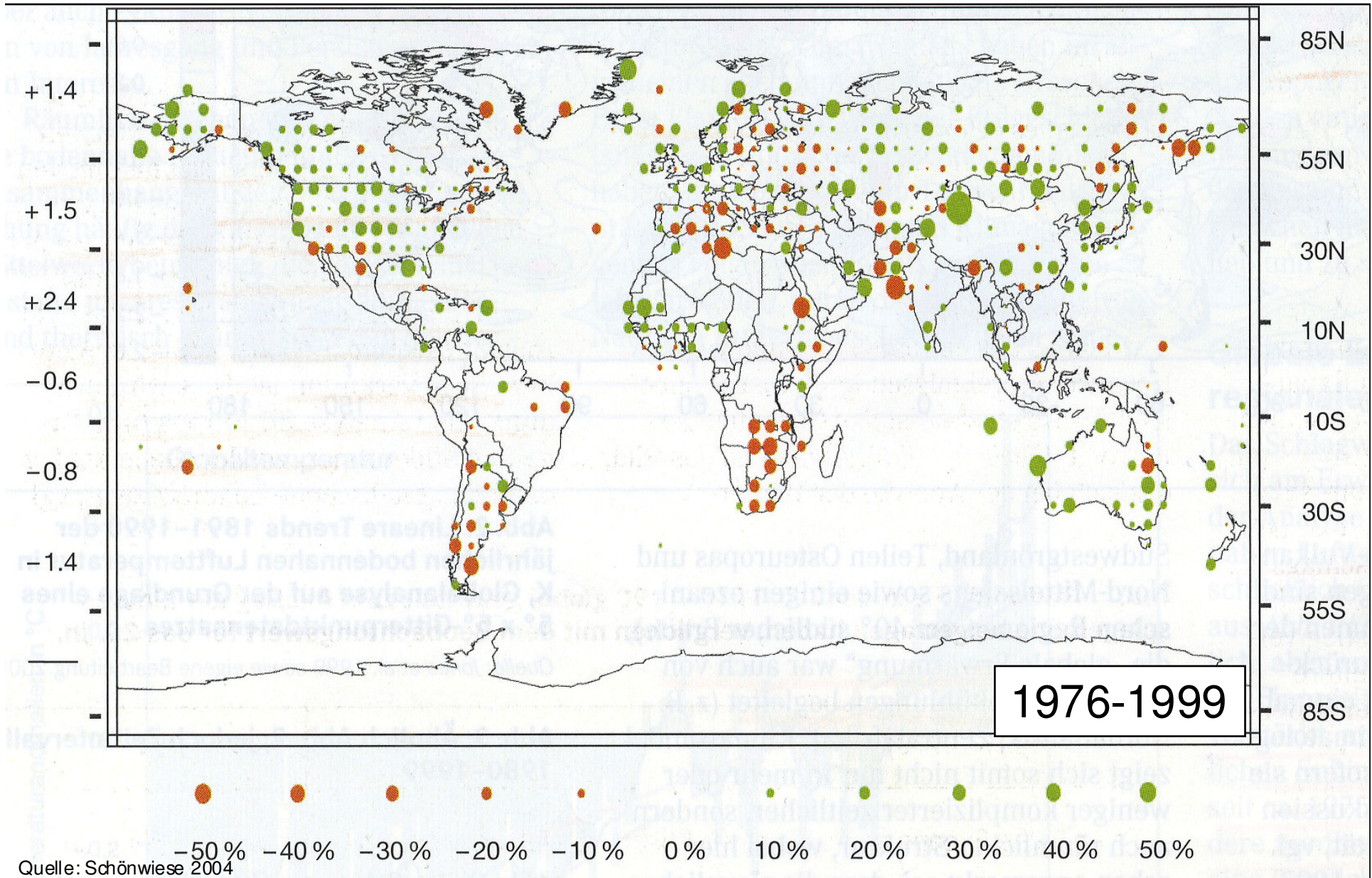
Quelle: http://www.grida.no/dimate/ipcc_tar/slides/ppt/05.19.ppt

Average Watervapor pressure at surface 1975-1995

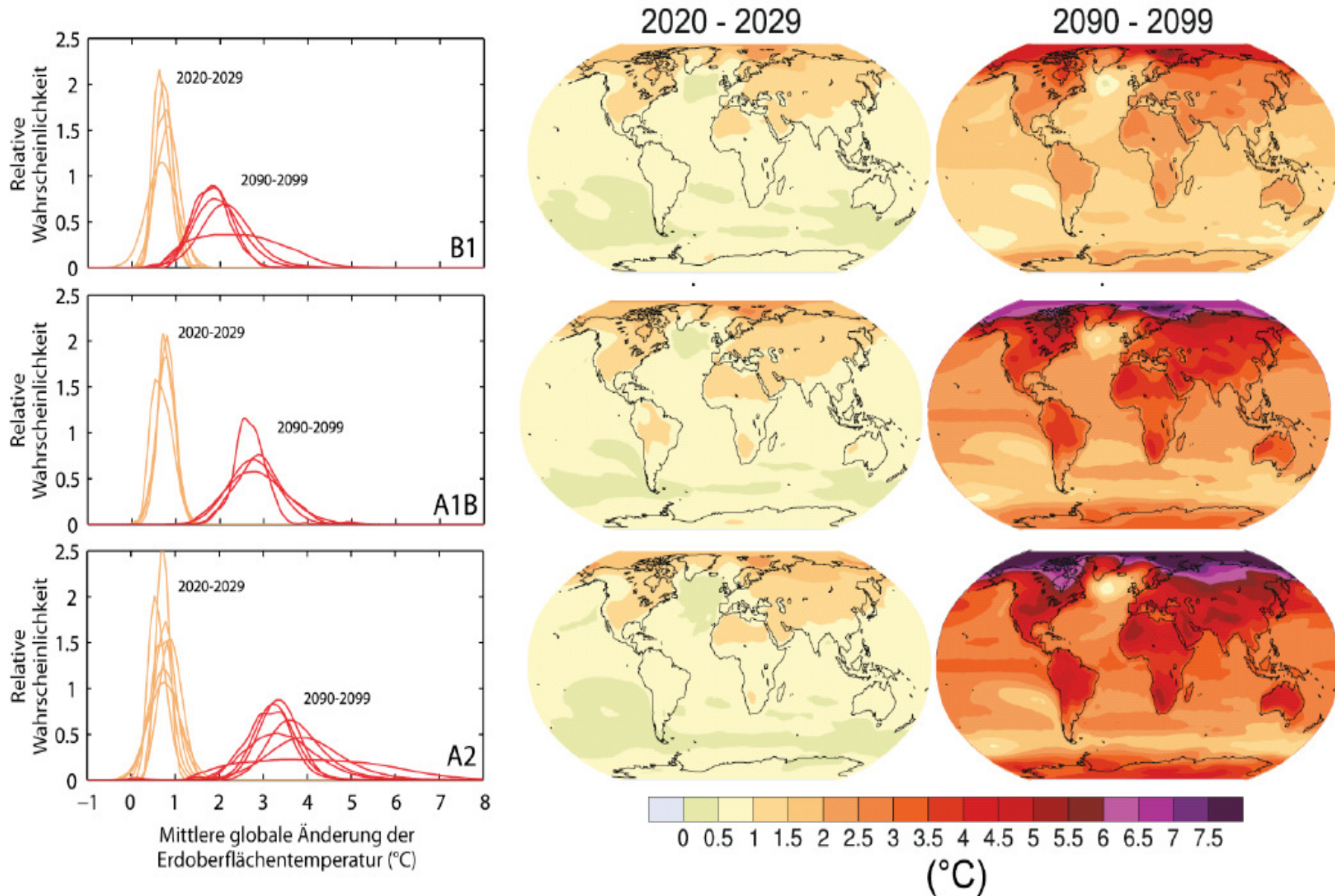


Quelle: http://www.grida.no/dimate/ipcc_tar/wg1/079.htm

Yearly Precipitation Trend

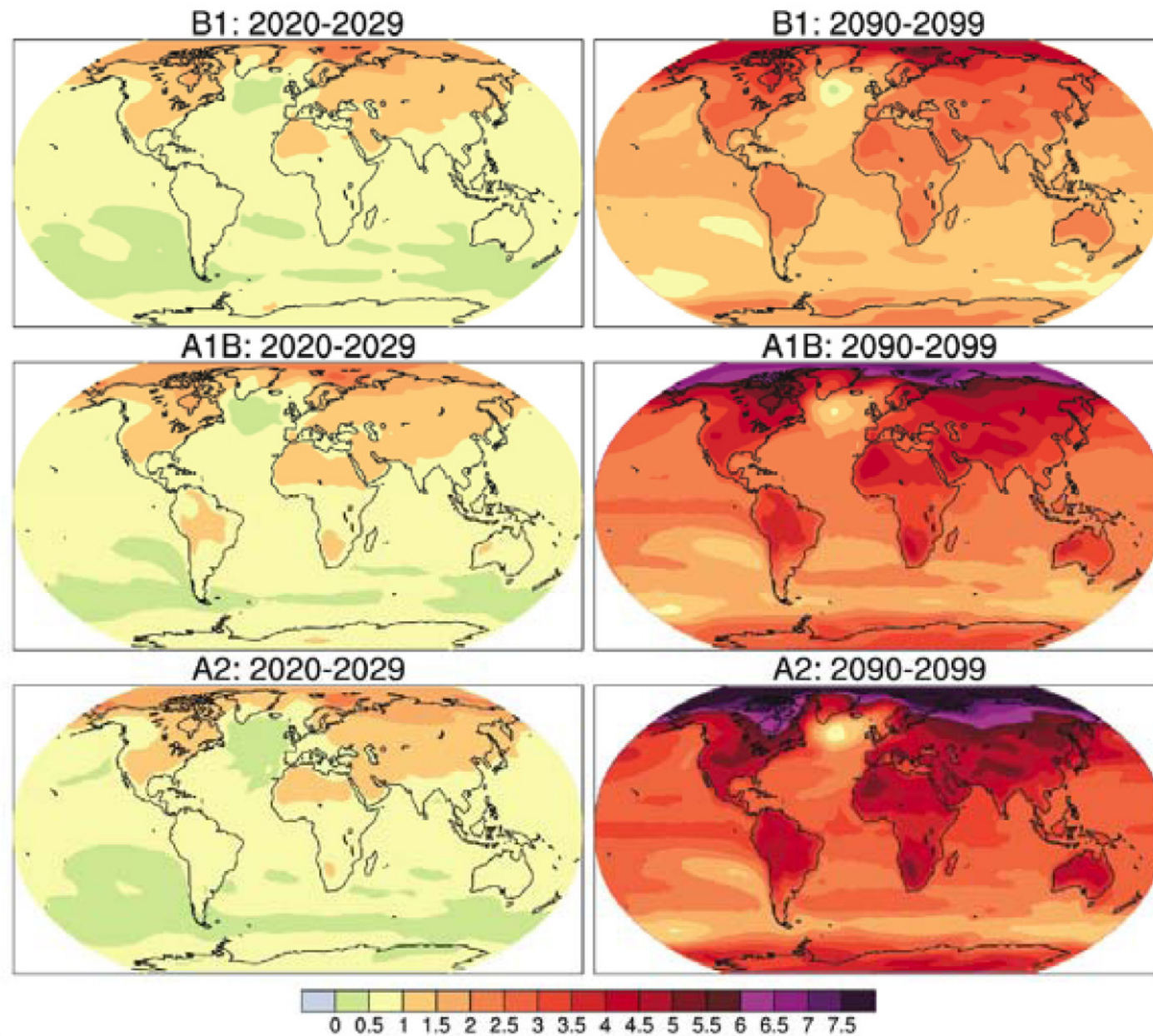


Modellprojektionen der Erdoberflächentemperatur



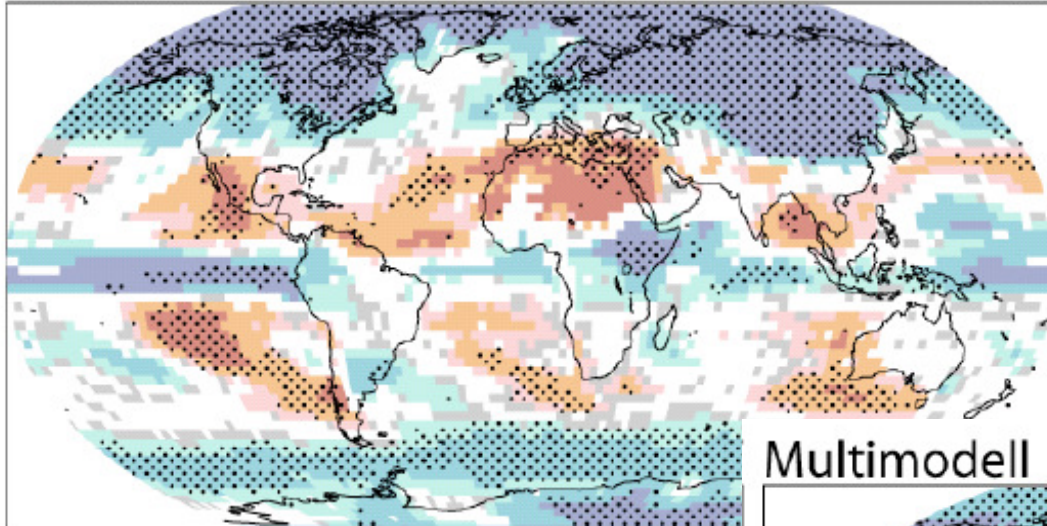
©IPCC 2007: WG1-AR4

Projected surface temperature changes for the early and late 21st century relative to the period 1980–1999.



Projected Changes of Precipitation

Multimodell A1B DJF

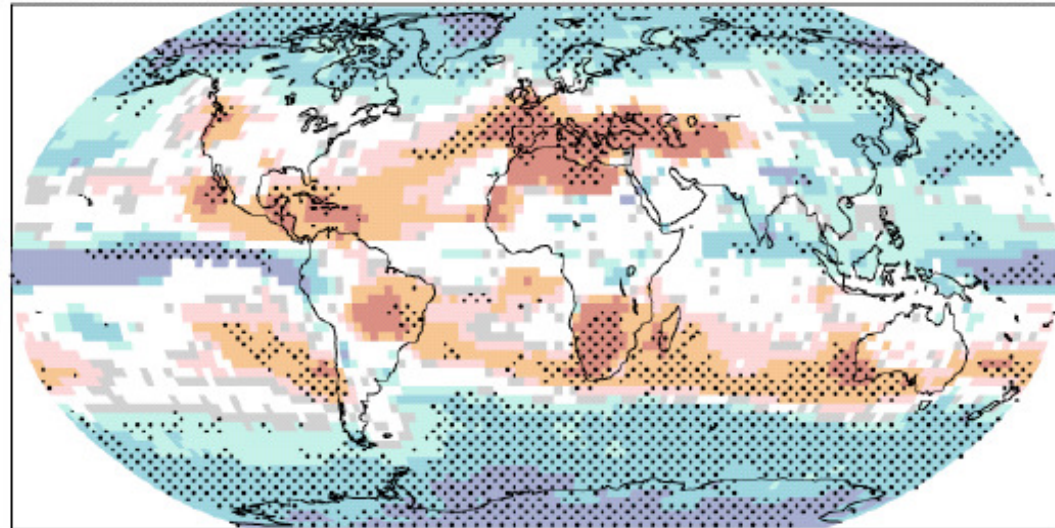


Rel. Change of Precipitation (in %) for the period 2090-2099 in relation to 1980-1999.



- Multimodell-Mittel
- weiße Flächen: weniger als 66% der Modelle stimmen bezüglich des Vorzeichens der Änderung überein
- punktiert: mehr als 90% der Modelle stimmen bezüglich des Vorzeichens der Änderungen überein

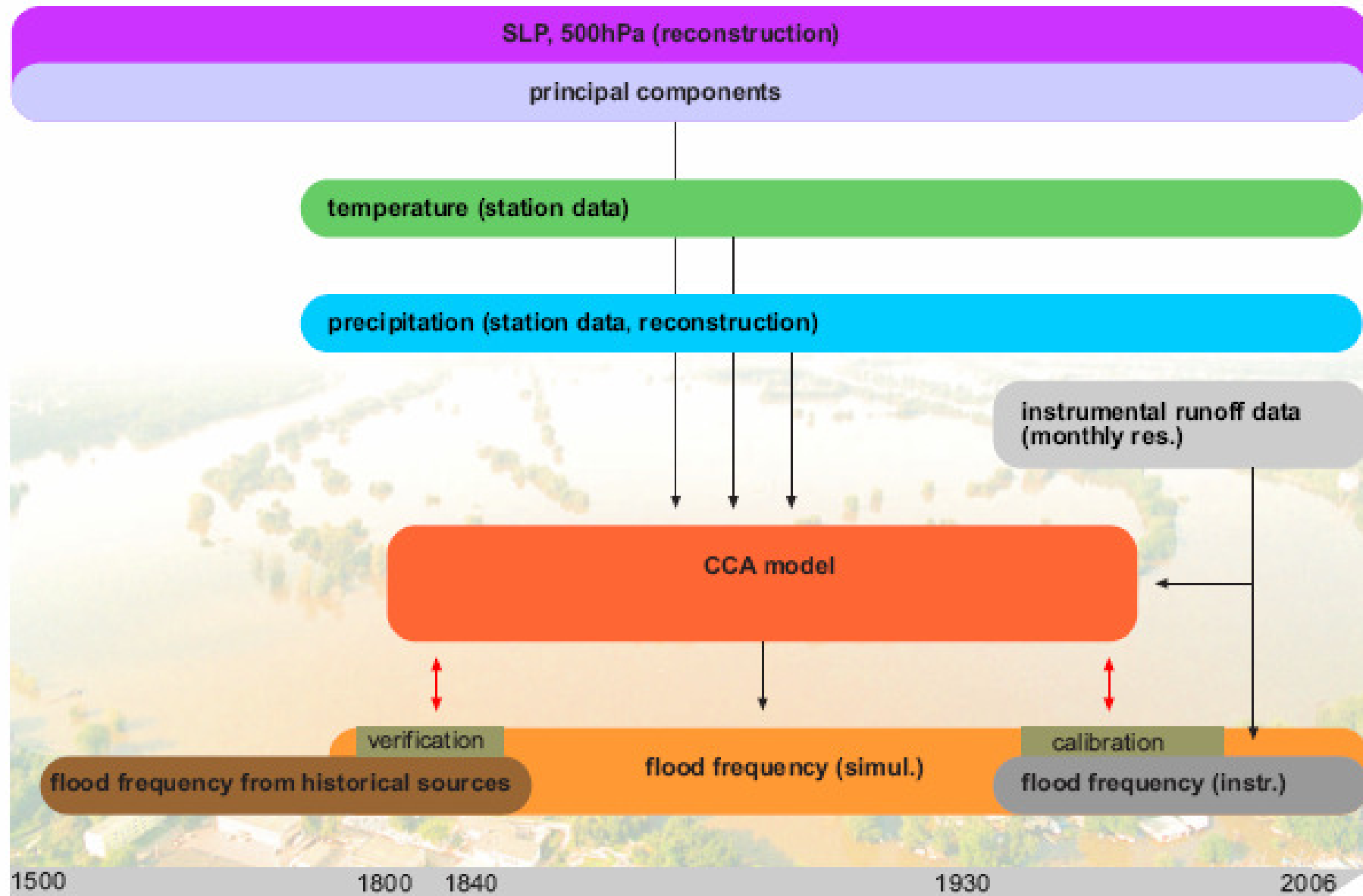
Multimodell A1B JJA

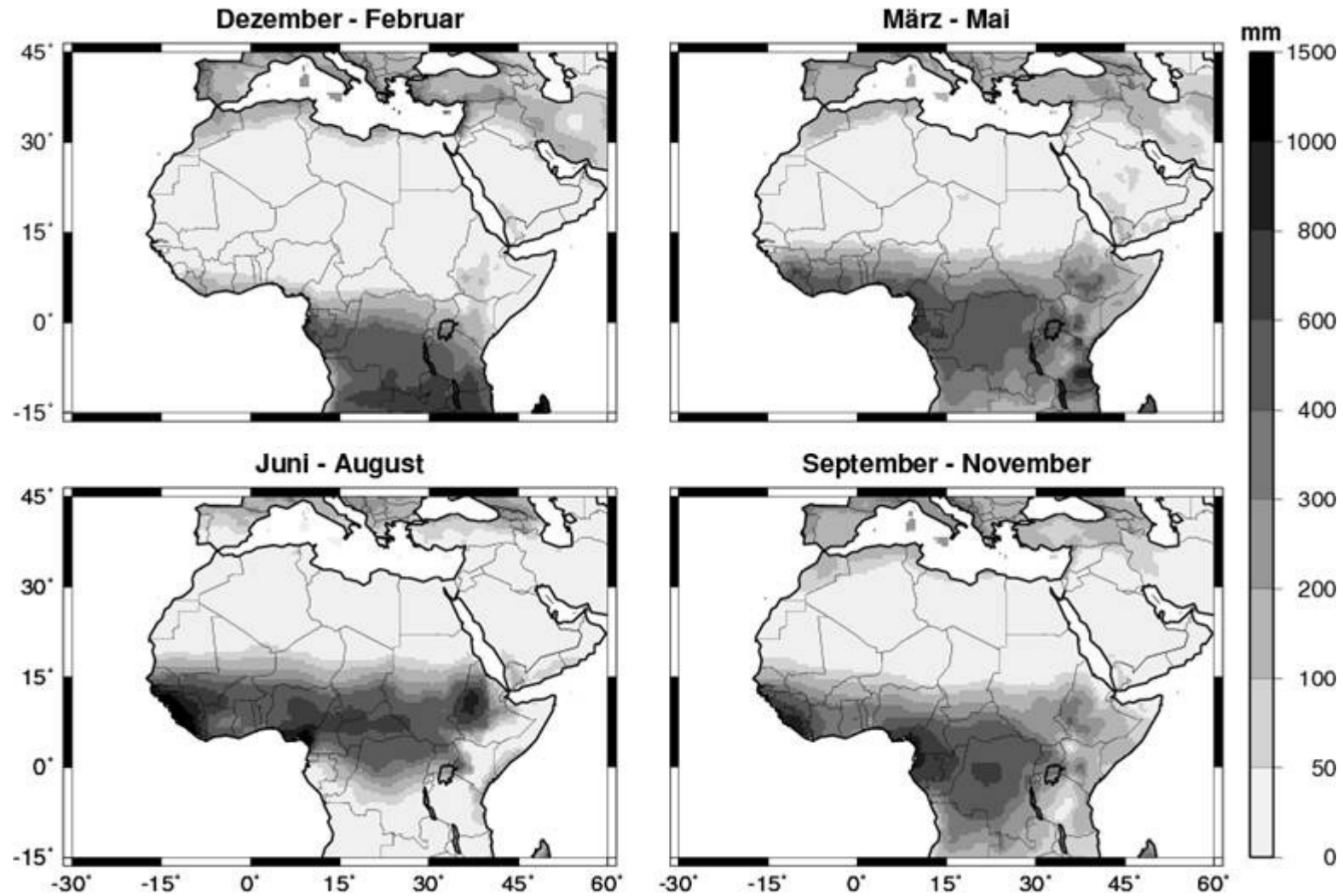


Local and regional perspective

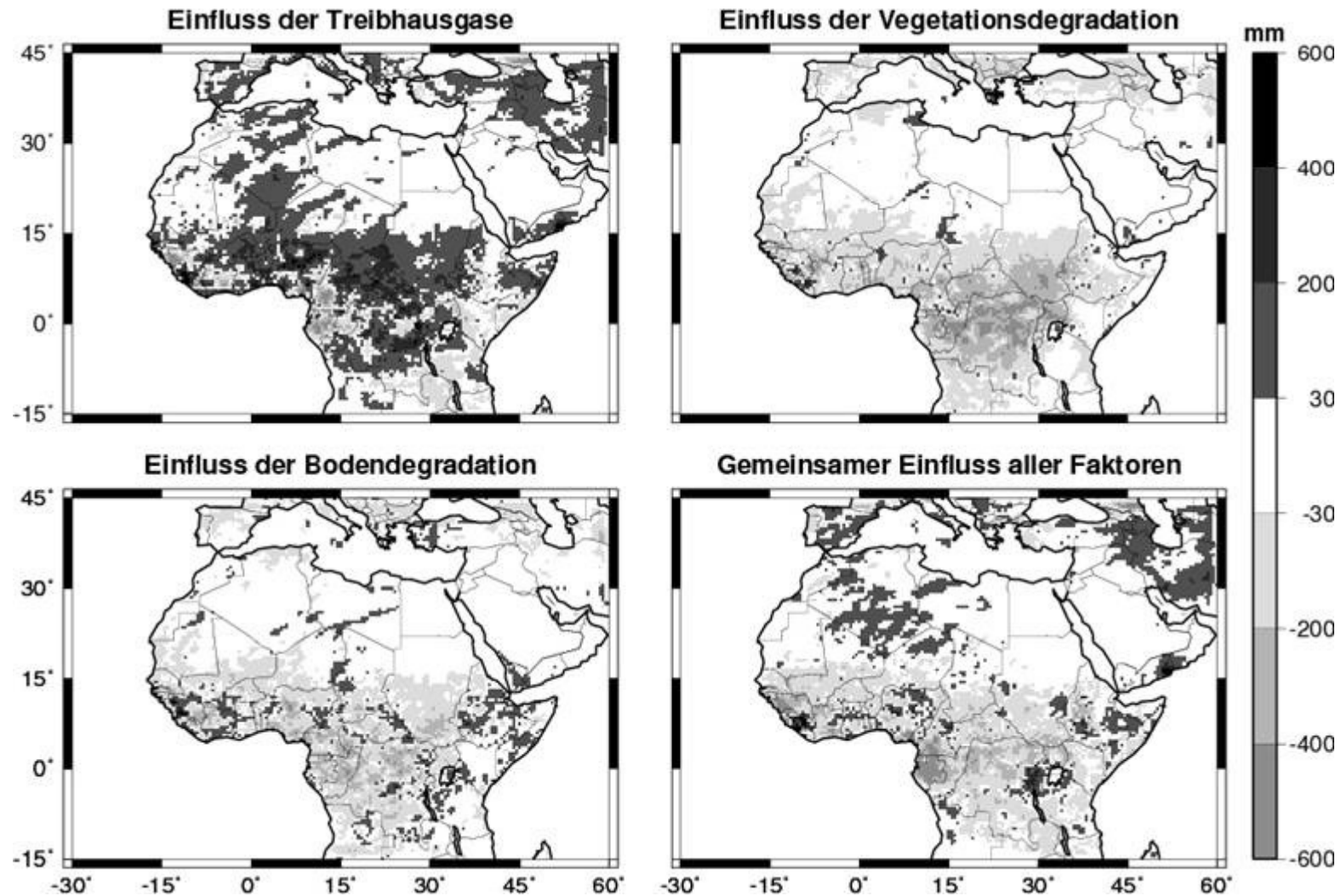
Model of the local climate development based upon local meteorological measurement data, global gridded data (ex. NCEP-NCAR reanalyse data) and downscaling of regional climate model results (ex. IPCC-DDC).

Downscaling Methodology





Recorded seasonal Precipitation amount over tropical and Northern Africa in mm.
Reference period 1901 - 1998 (CRU, New et al. 2000).



Simulated Changes in Precipitation during summer (May - October) in mm, influenced by an increase in Greenhousegases, reduced Vegetation Cover, Processes of land degradation. Given Values show the differences between the actual situation and a period around 2025 to 2030.

Long-term trends on the local and regional scale

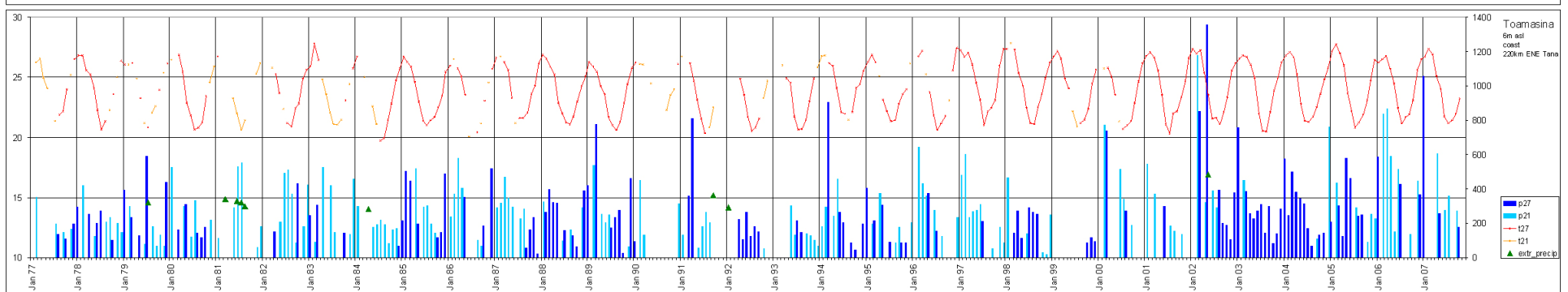
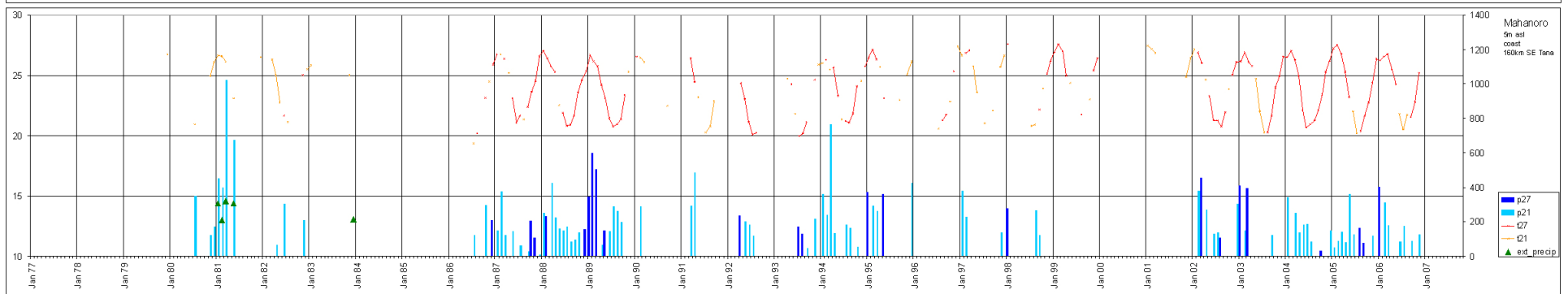
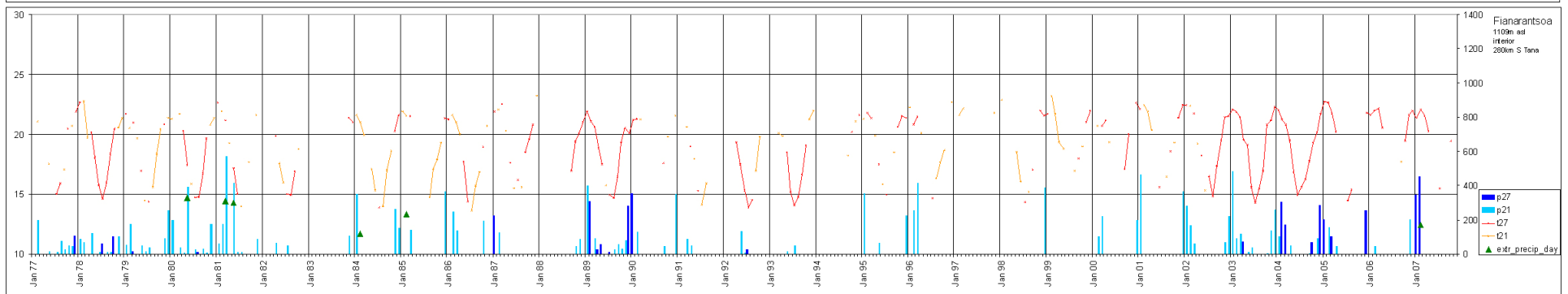
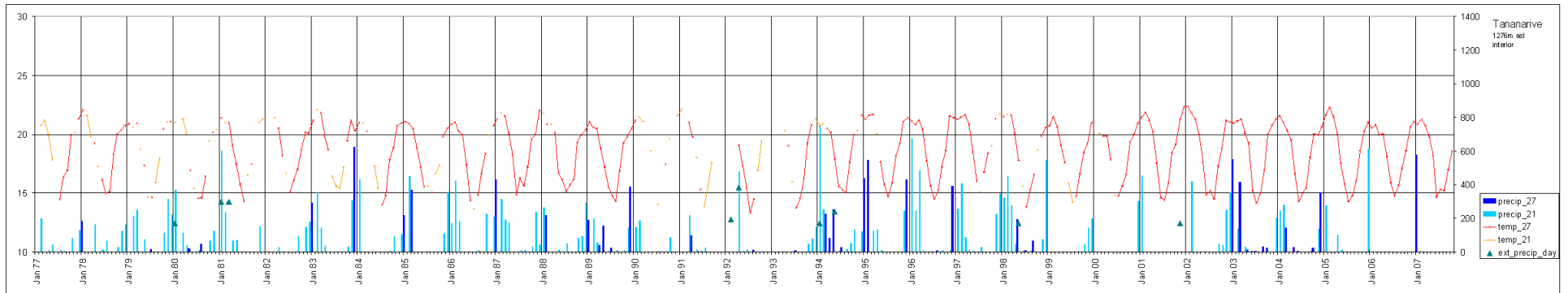
Derivation of time series of rainfall data

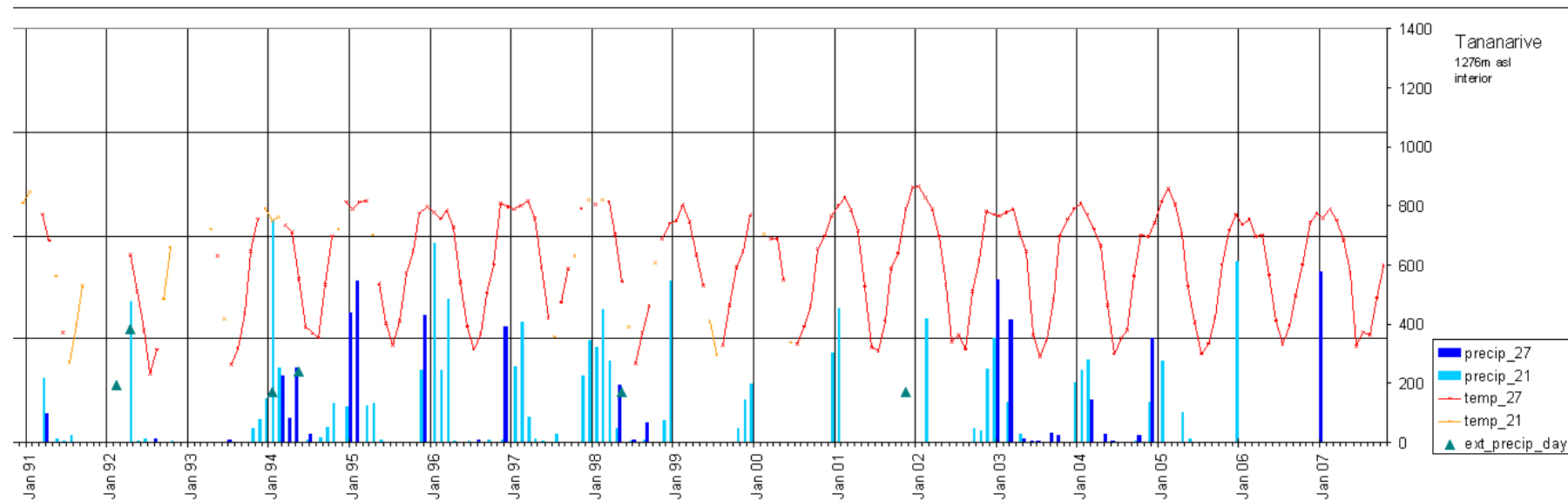
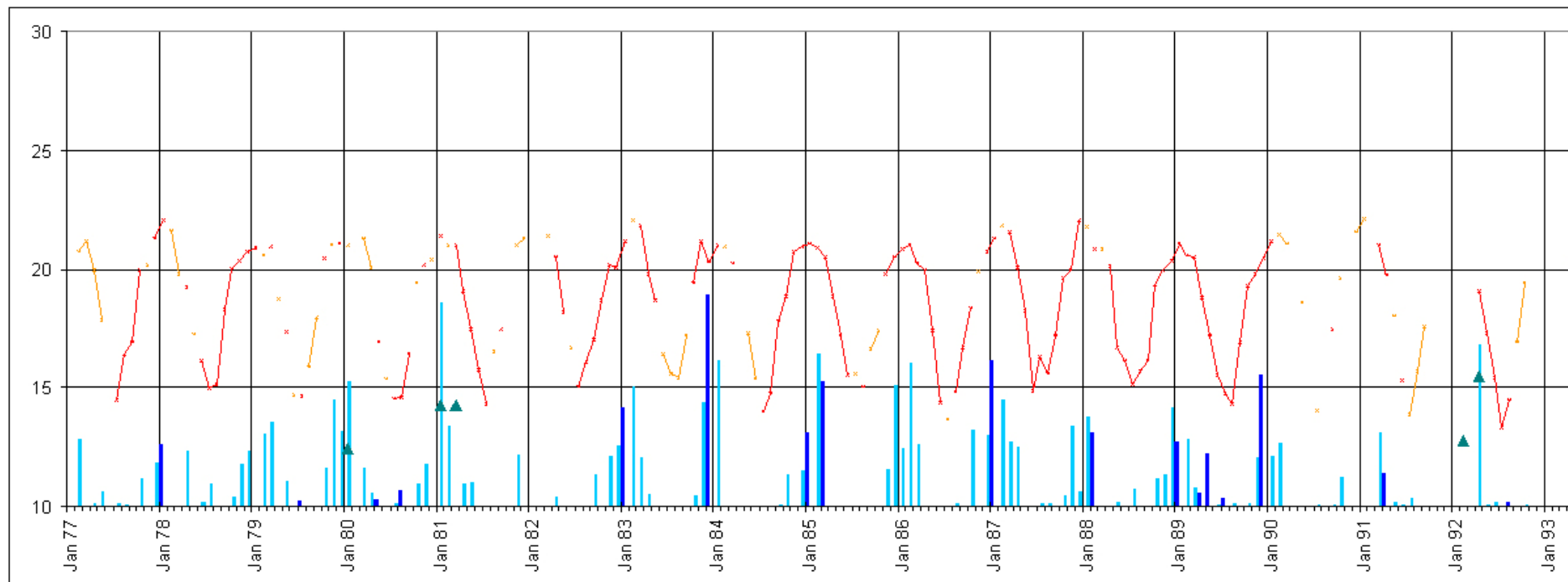
Soutien à la prévention des catastrophes à Madagascar au niveau local, urbain et national

Étude de base reposant sur des bases scientifiques et d'ingénierie (analyse des risques) destinée à identifier le risque d'inondation dans la capitale, Antananarivo

**S. Lala Rakotoson, SOMEAH, Antananarivo,
Prof. Dr. A. Drescher, Prof. Dr. R. Glaser, Dipl. Geogr. M. Lechner, Dipl.
Geogr. J. Schoenbein, Dipl. Geogr. S. Glaser, T. Odrich – IPG, Université des
Freiburg
Dr. H. Dickow AWI, Arnold Bergstraesser Institute, Freiburg**







Risk assessment of extreme precipitation in the coastal areas of Chennai as element of catastrophe prevention

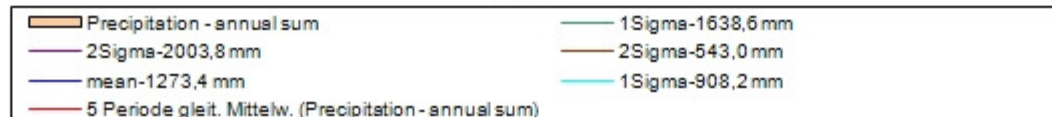
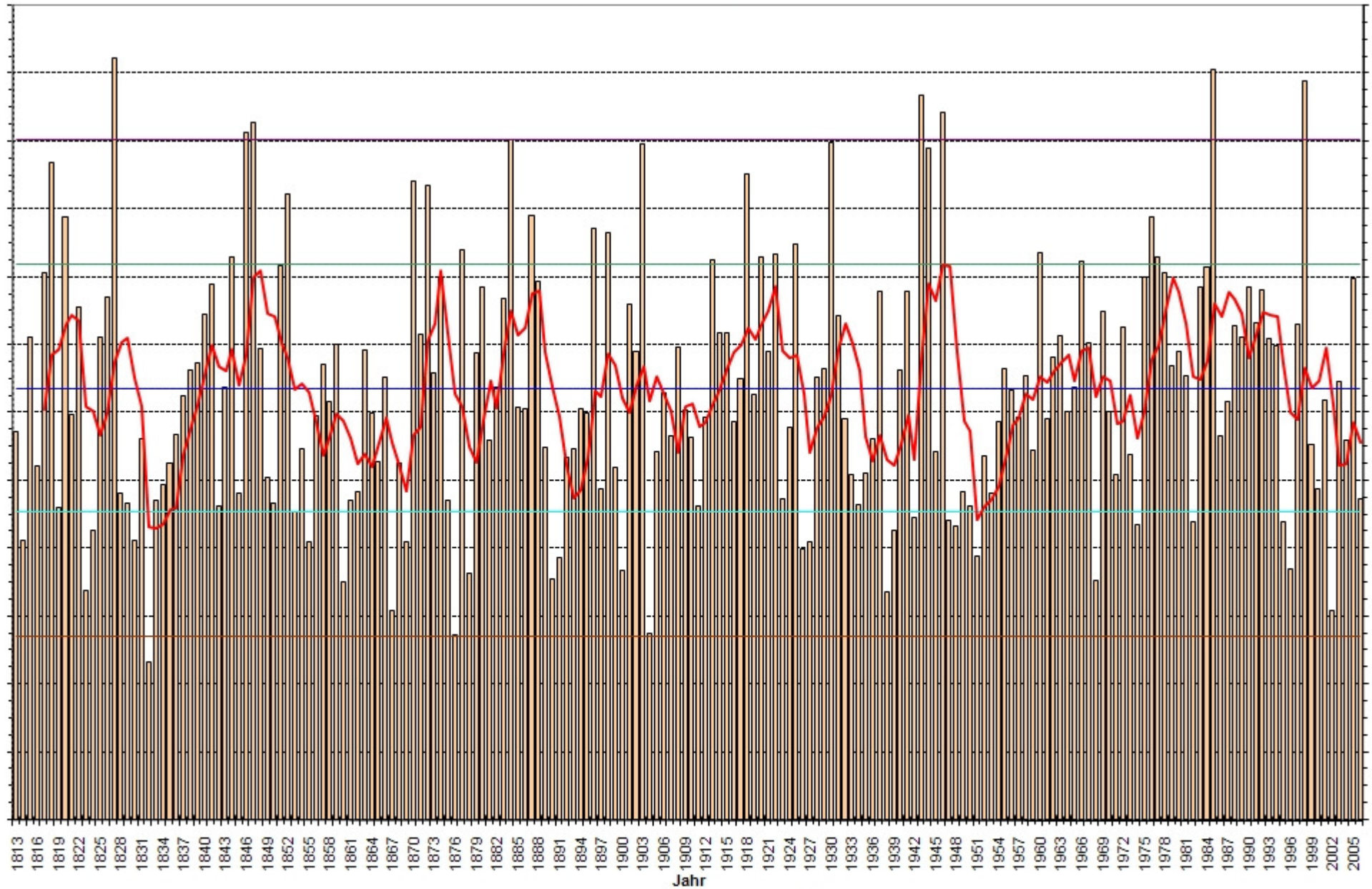


Department of Physical Geography, University of Freiburg, Germany
Care Earth, Chennai, India

Loyola College, Chennai, India supported by the German Agency for Technical Cooperation (GTZ)

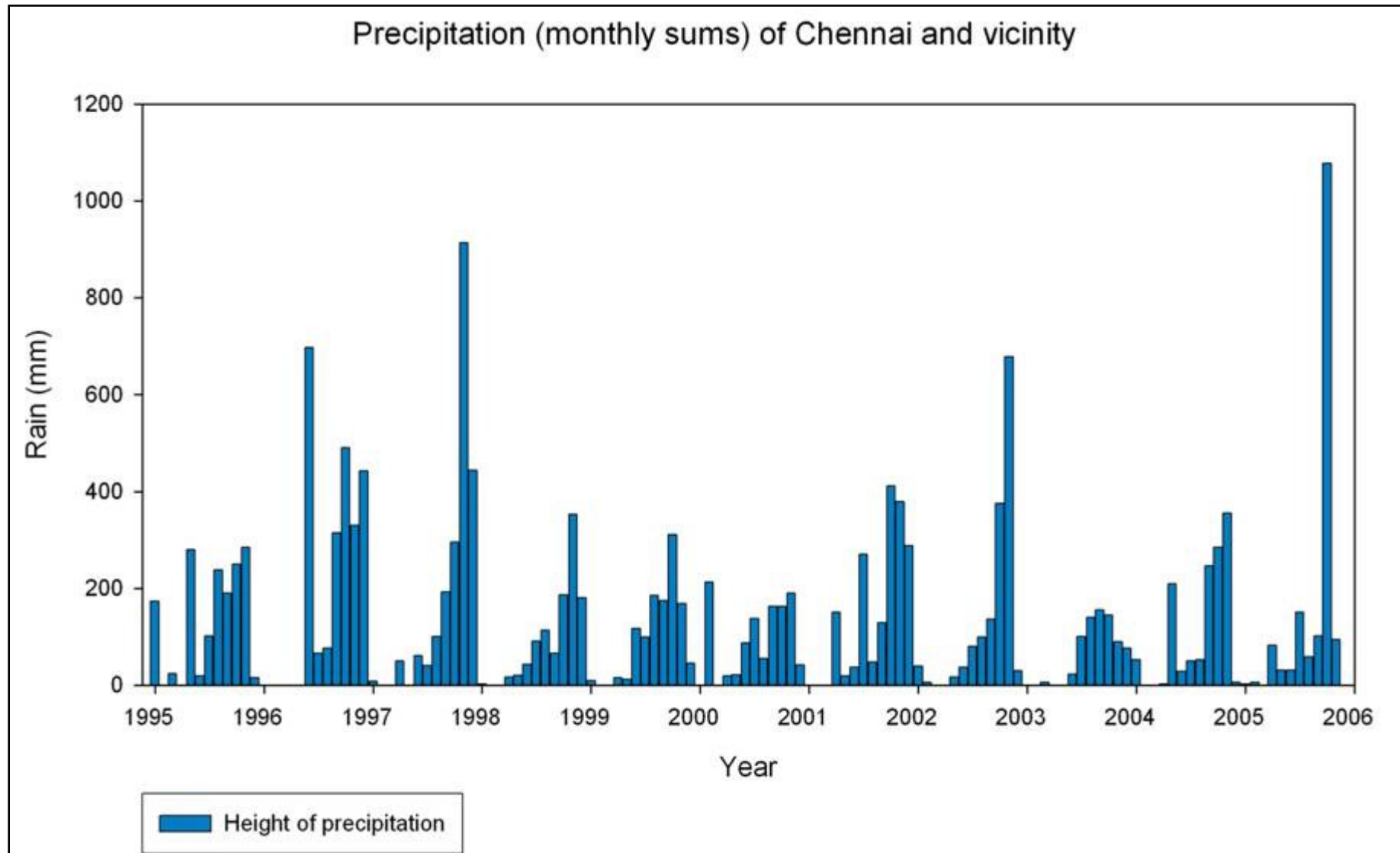
Prof. Dr. Axel Drescher, Prof. Rüdiger Glaser, Dr. Constanze Pfeiffer, Dr. Jayshree Vencatesan, Dr. Ranjit Daniels, Dr. Paul Dostal
Dr. S. Vincent, Stephanie Glaser, Marco Lechner, Elke Schliemann-Kraus,

Precipitation in Chennai, India

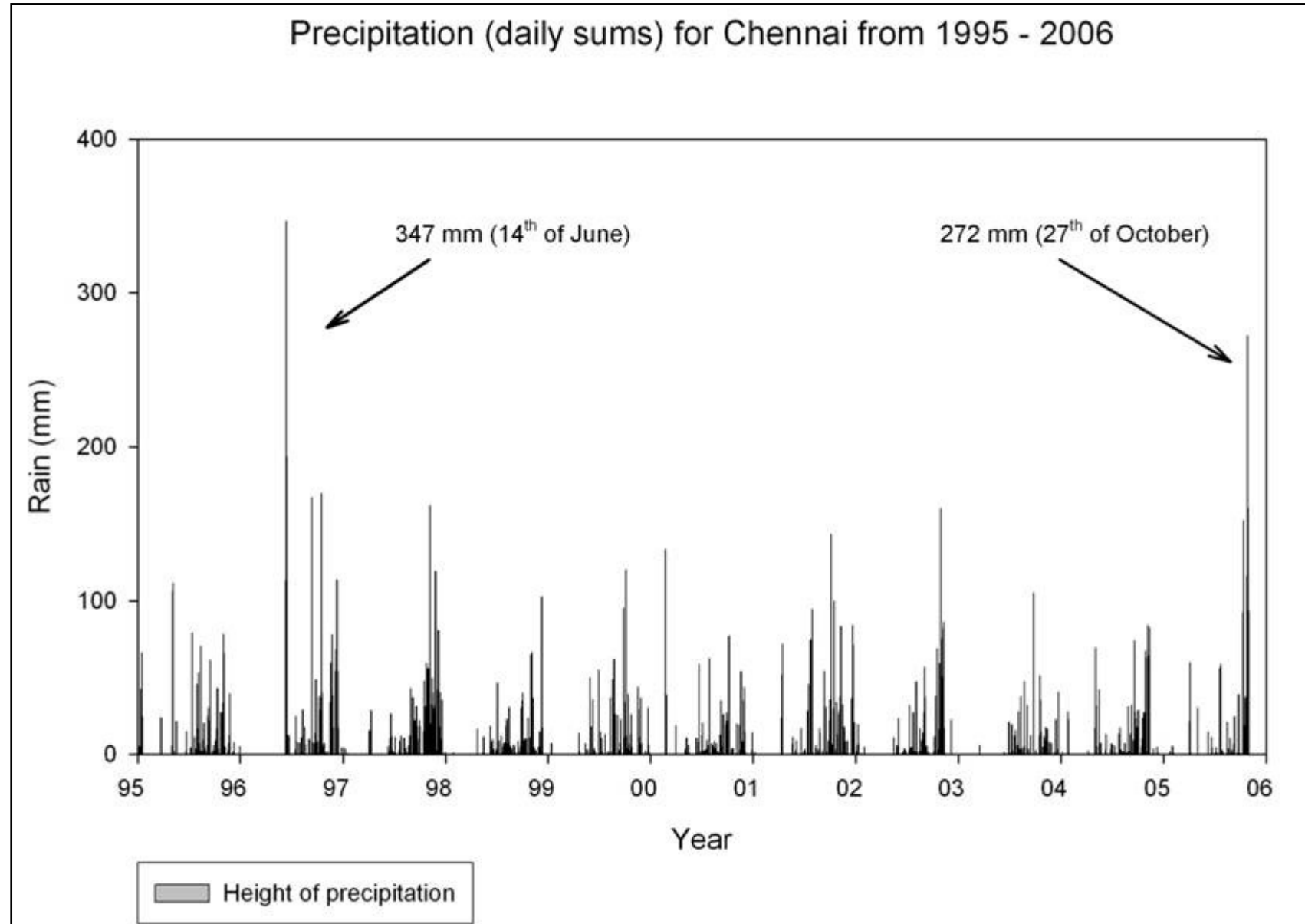


Precipitation of Chennai and vicinity on a monthly basis.

The dry periods are always in the beginning of the year.
The rain falls mainly in the late Monsoon period between October until December.



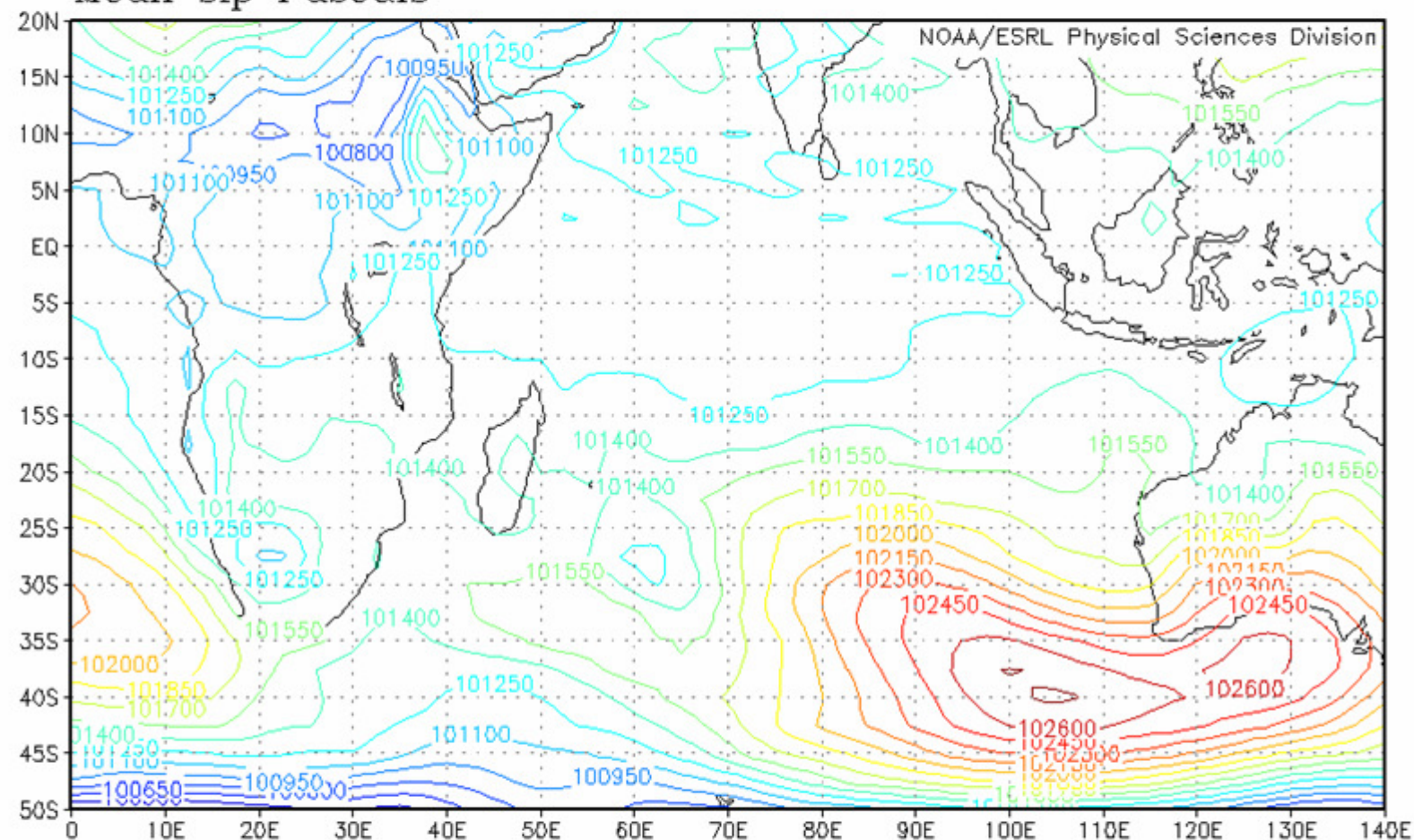
Precipitation of Chennai and vicinity on a daily basis. The most extreme rain events occurred on the 14th of June 1996 and on 27th of October 2005 and are indicated with arrows.



Definition of large scale Circulation Pattern

lon: plotted from 0.00 to 140
lat: plotted from -50 to 20.00
t: averaged over Mar 11 1981 to Mar 13 1981
lev: 0

Mean slp Pascals

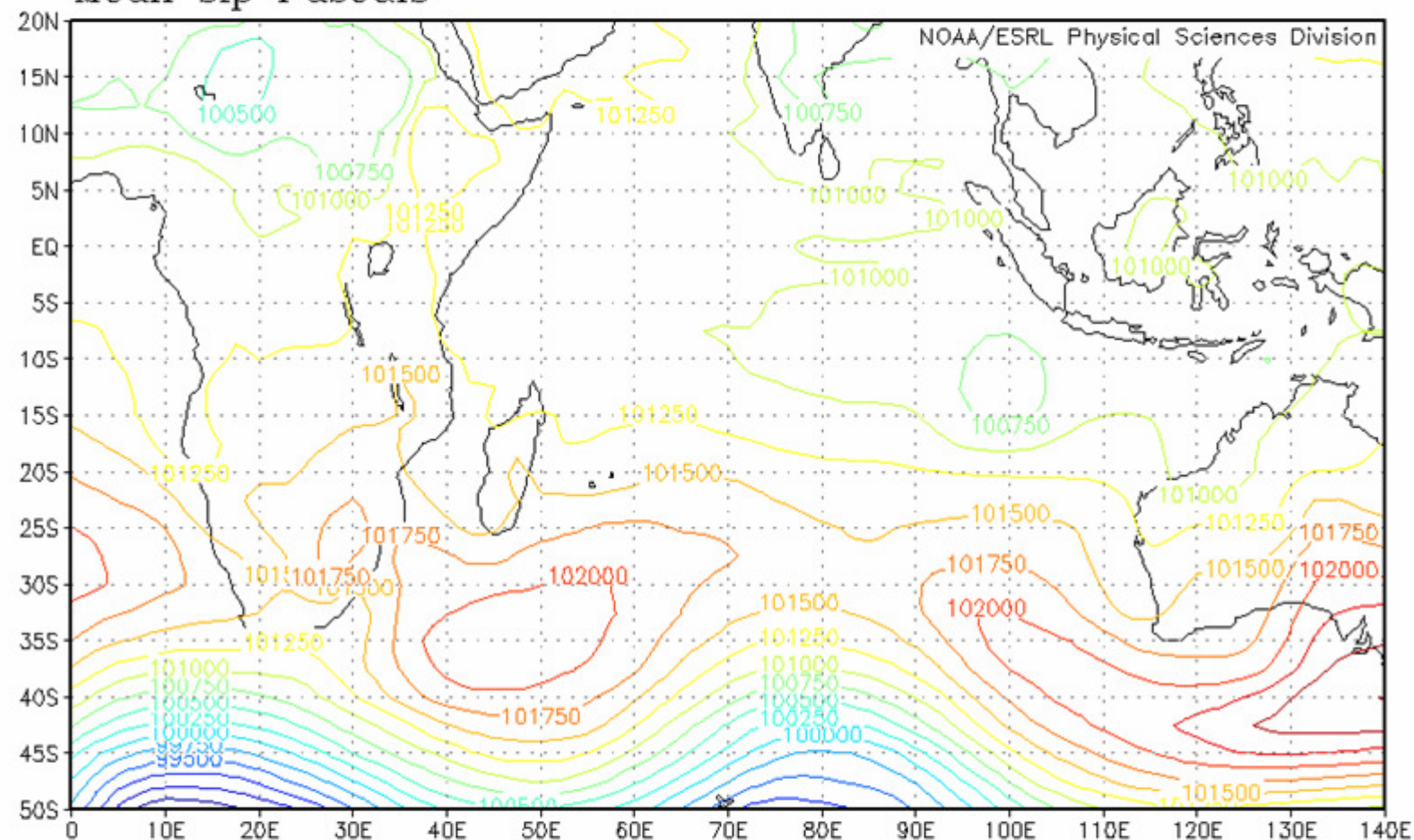


MAX=102769
MIN=100254

GrADS image

lon: plotted from 0.00 to 140
lat: plotted from -50 to 20.00
t: averaged over Apr 8 1992 to Apr 10 1992
lev: 0

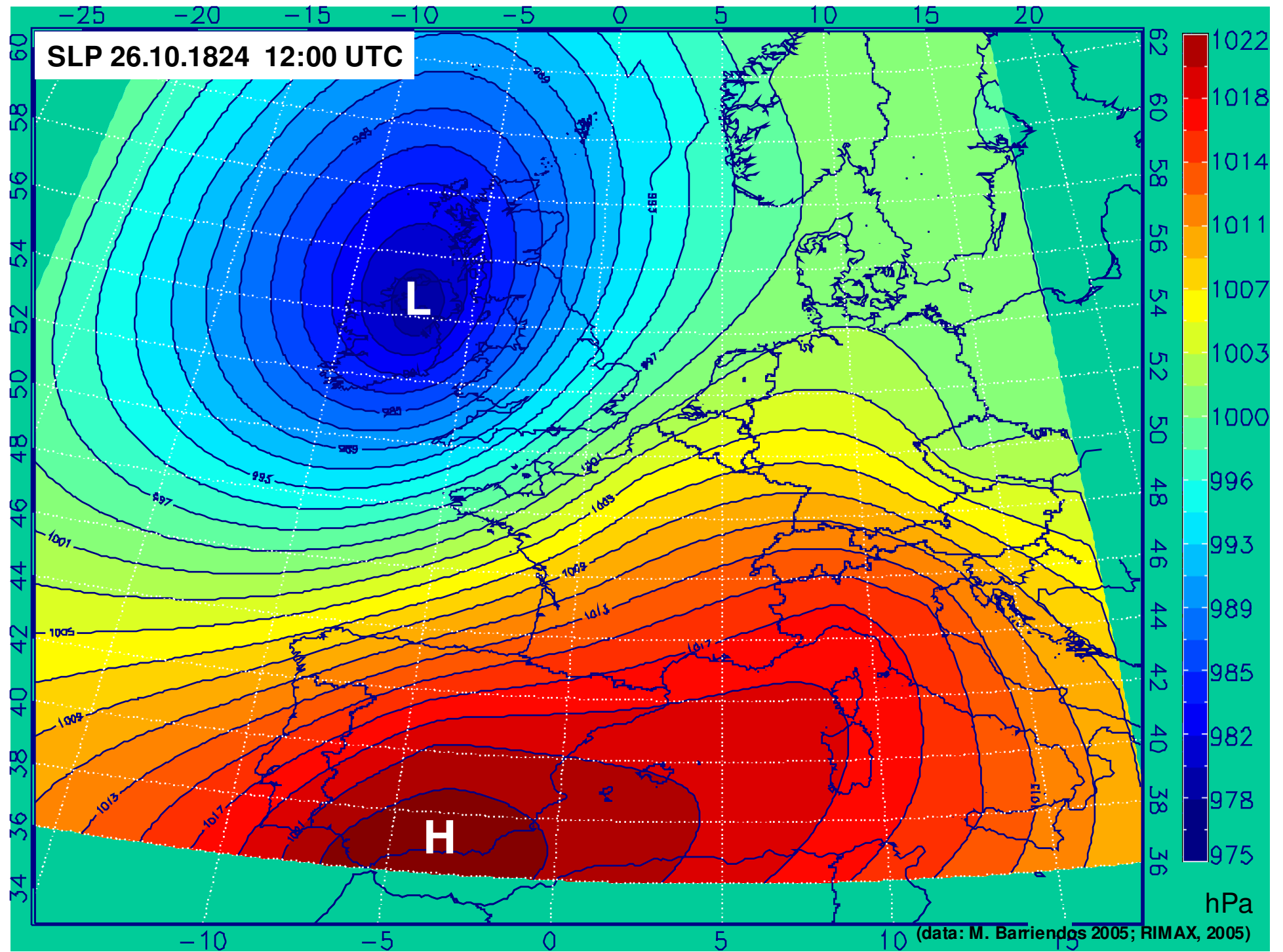
Mean slp Pascals

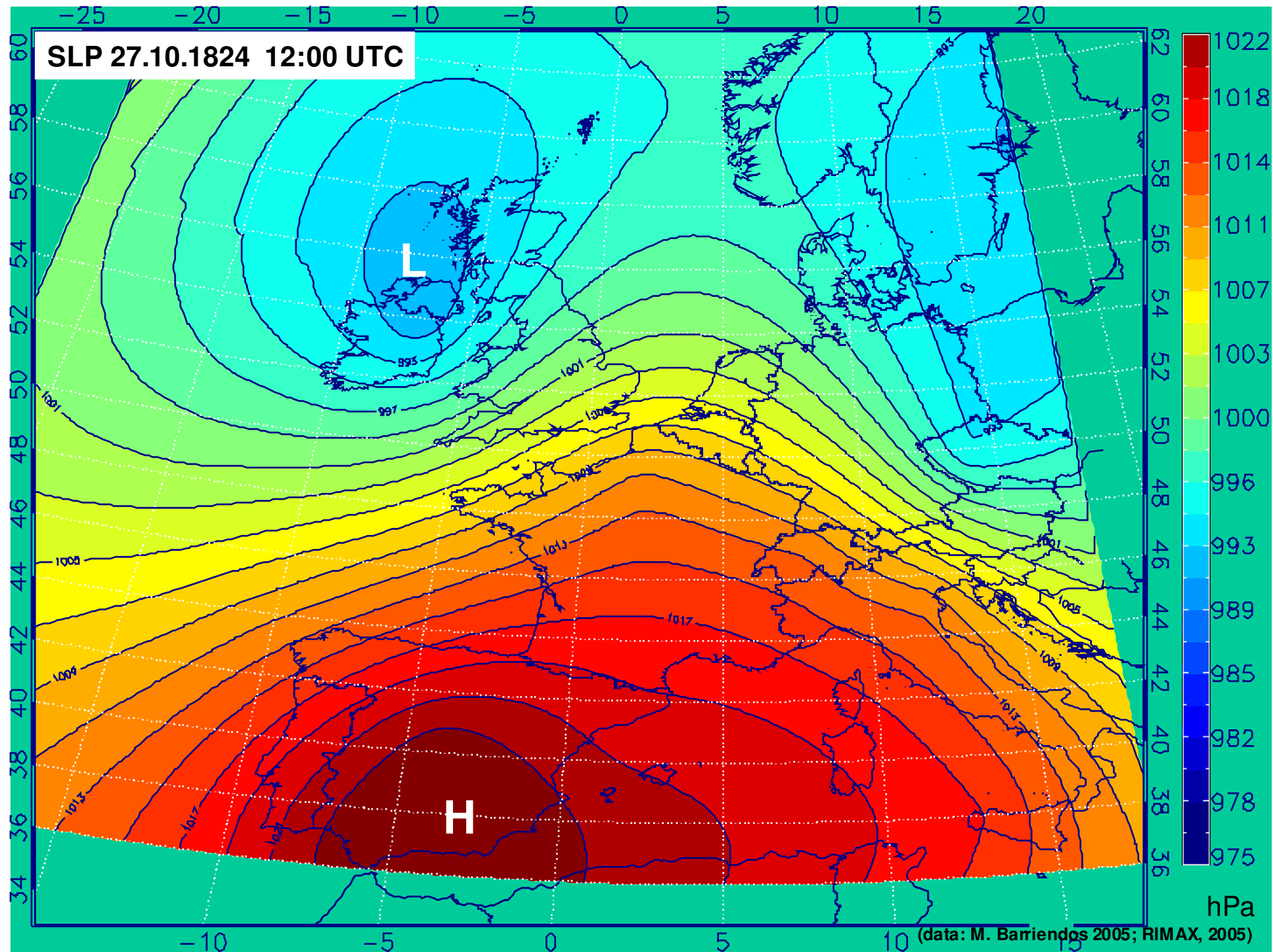


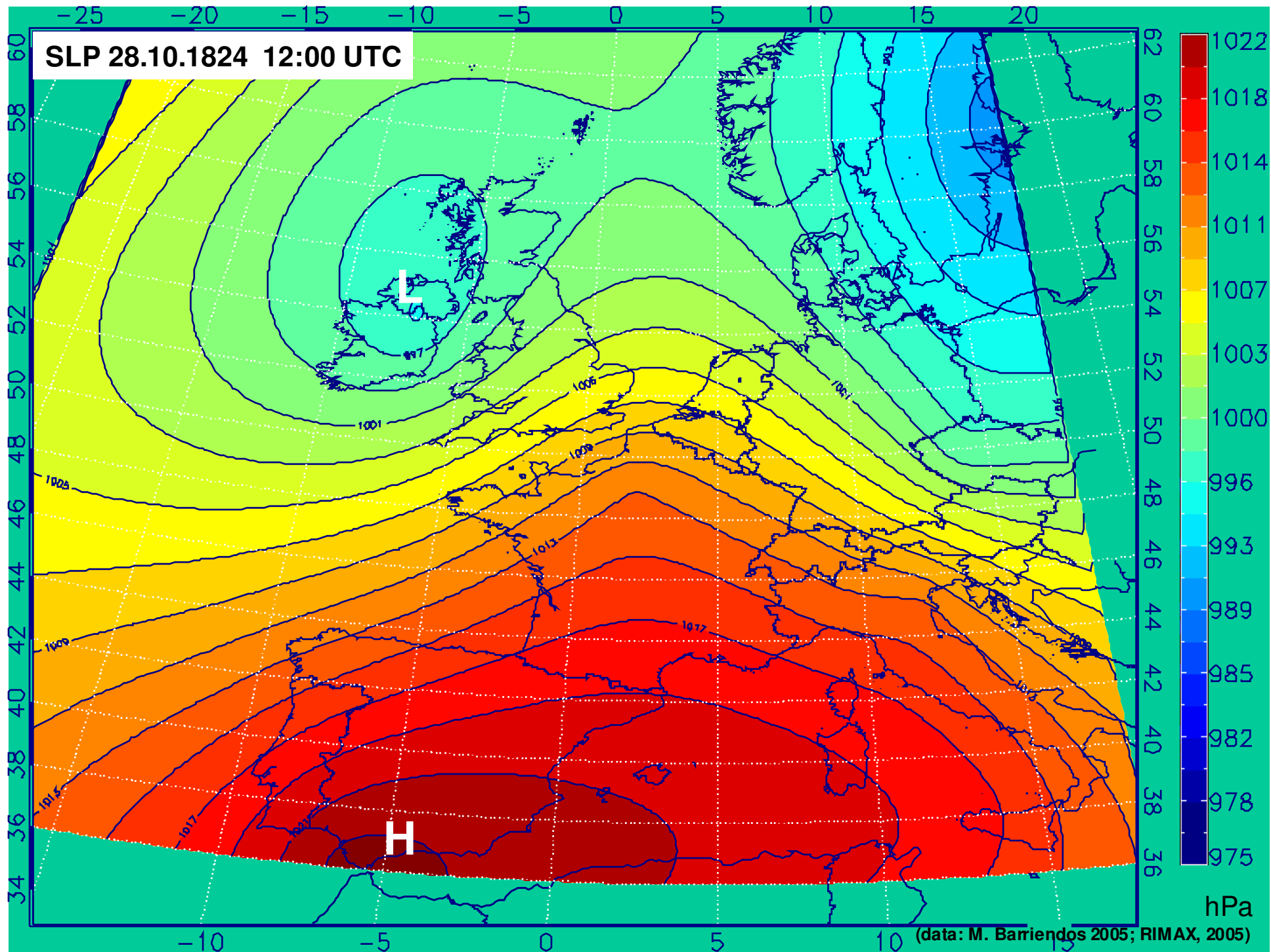
MAX=102757
MIN=98517

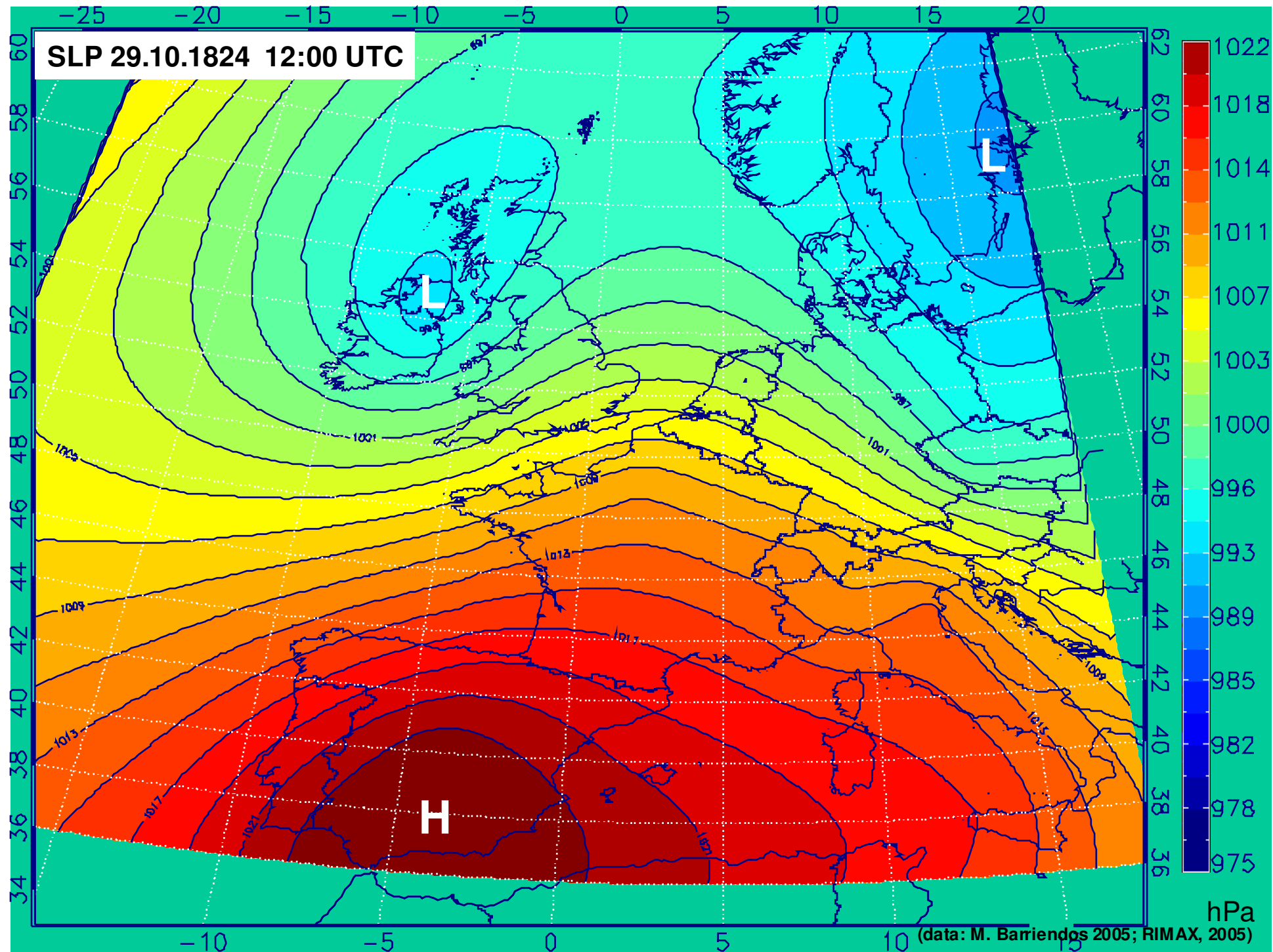
GrADS image

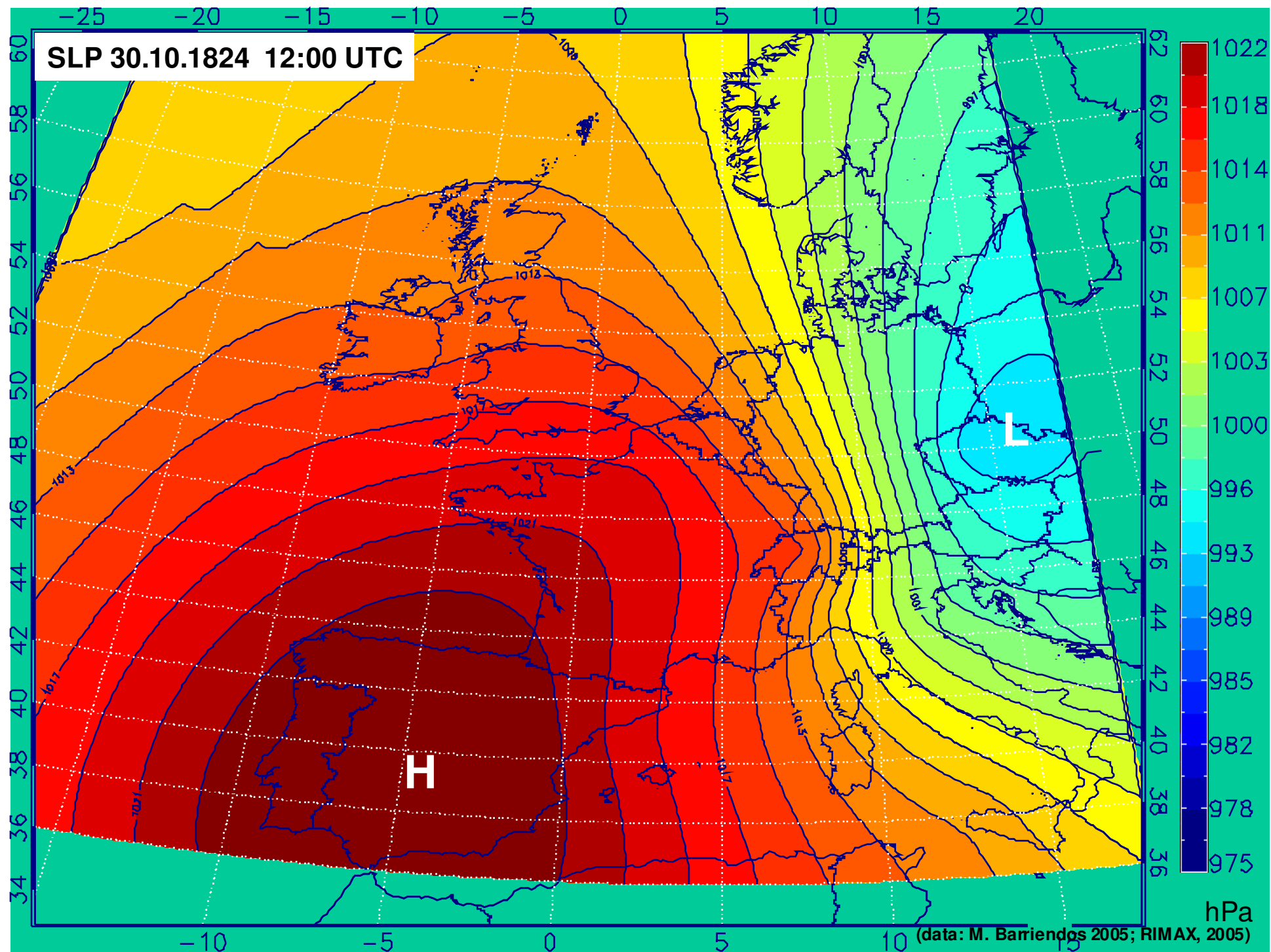
Definition of small scale Circulation Pattern



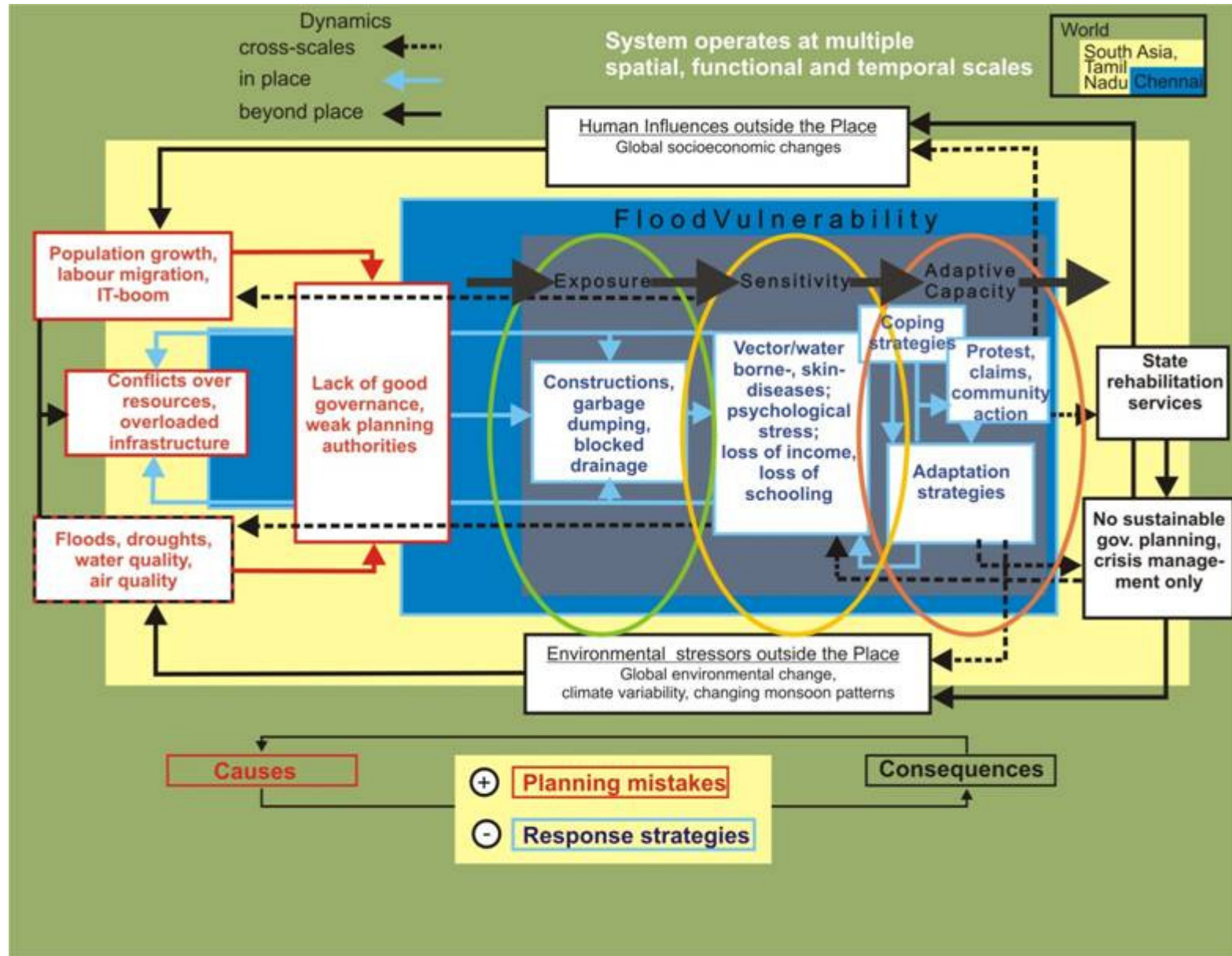








- local and regional empirical studies in key regions defined by global models are needed (incl. social and economic data);
- model different climatic scenarios based on past and current predictions; Model of the local climate development based upon local meteorologic measurement data, global gridded data (ex. NCEP-NCAR reanalyse data) and downscaling of regional climate model results (ex. IPCC-DDC).
- whenever possible refer results to the long-term perspective and try to define the “natural variability”
- carry out surveys to map out habitat boundaries of both wild and cultivated species in target sites. Accessing the temporal variation of habitat boundaries of selected species by comparing satellite images of different time steps.
- review the existing farming systems and/or harvesting practices (in case of wild species) and analyze respective vulnerability under different climate change scenarios;
- Analyses of climatological, biological and pedological change patterns and development of possible scenarios based also on existing evidence from recent studies for the various sites and regions of target countries:



Conceptual framework – modified after Turner et al. (2003)

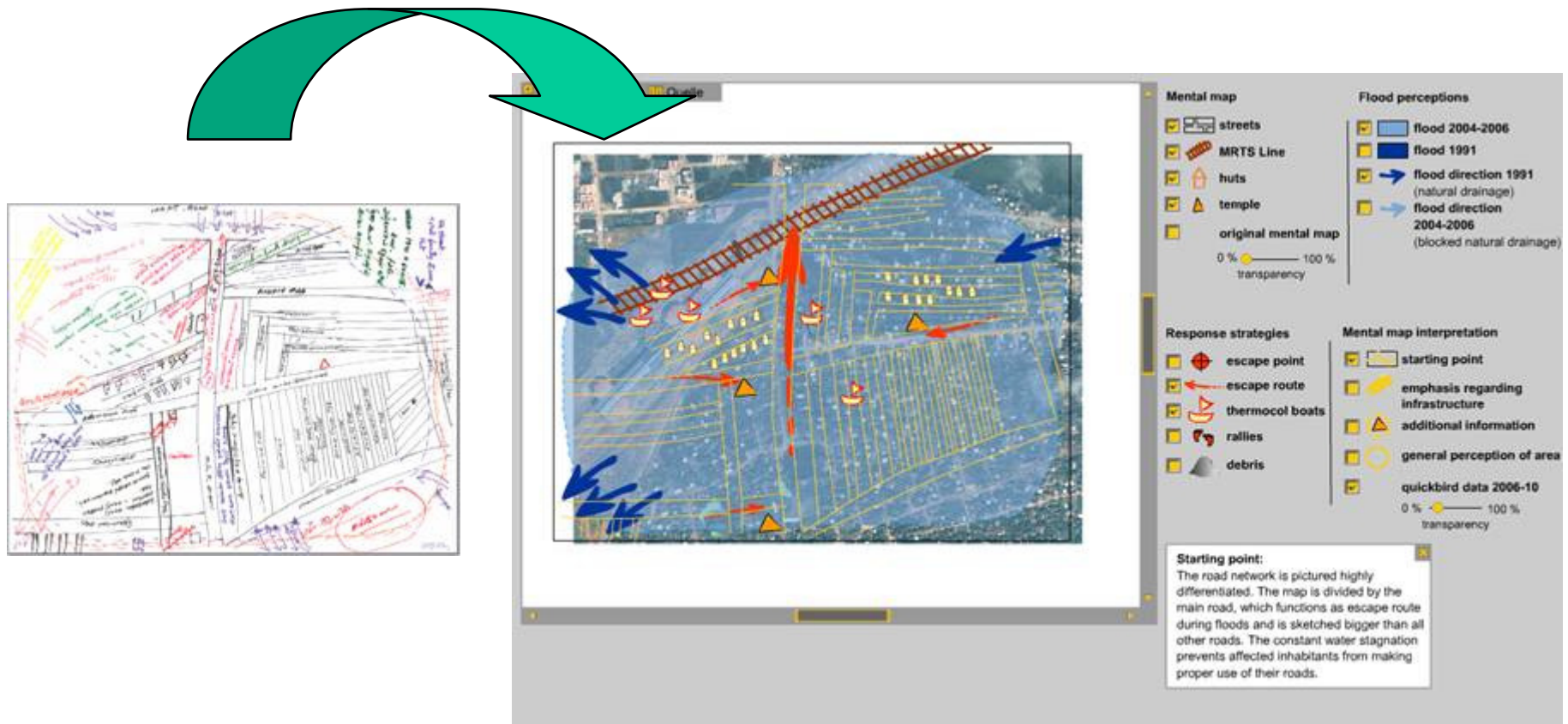
Investigation methods: Group discussion, participatory mapping and keyinformant interviews



Foto: Pfeiffer 2007

Source: Field Survey 2007 GTZ Project Chennai

Project Chennai – Flash as Visualisation-Tool



Information portal

[Home](#)[Maps](#)[Media](#)[Data](#)[Contact](#)

Risk assessment of extreme precipitation in the coastal areas of Chennai as element of catastrophe prevention

Welcome to the GT Z-funded project

Risk assessment of extreme precipitation in the coastal areas of Chennai as element of catastrophe prevention

*Carried out by
the Department of Physical Geography, University of Freiburg/ Germany
Care Earth, Chennai/ India and the
Loyola College, Chennai/ India
(November 2006 - April 2007)*



gtz



Worldwide the risk of floods is omnipresent, may it be in New Orleans, in Jakarta or in Chennai/ India. In Chennai disastrous tropical monsoon linked with excessive precipitation frequently lead to wide-flat floods in the coastal plains. Caused by rapid urbanisation, the population in urban and periurban areas is more and more affected by these events.

The project analysed environmental aspects of risk exposure as well as socioeconomic aspects of risk perceptions and response strategies. To get a holistic perspective of the complex reasons and impacts of floodings satellite data, hydrological and census data were combined with informations gathered through transect walks, key-informant interviews, group discussions and participatory mapping.

As research site, a natural marshland located South of Chennai was selected. Chennai (formerly named Madras) is the capital of the Indian state of Tamil Nadu and India's fourth largest metropolitan city. The area around the so-called Pallikaranai Marsh features large flood plains, different socioeconomic groups, a well established IT-corridor and important infrastructure and therefore proved to be an ideal research site.

The results of the research were used for a flood map, which visualises risk perceptions as well as adaptation and coping strategies and provides a basis for further planning of flood interventions.

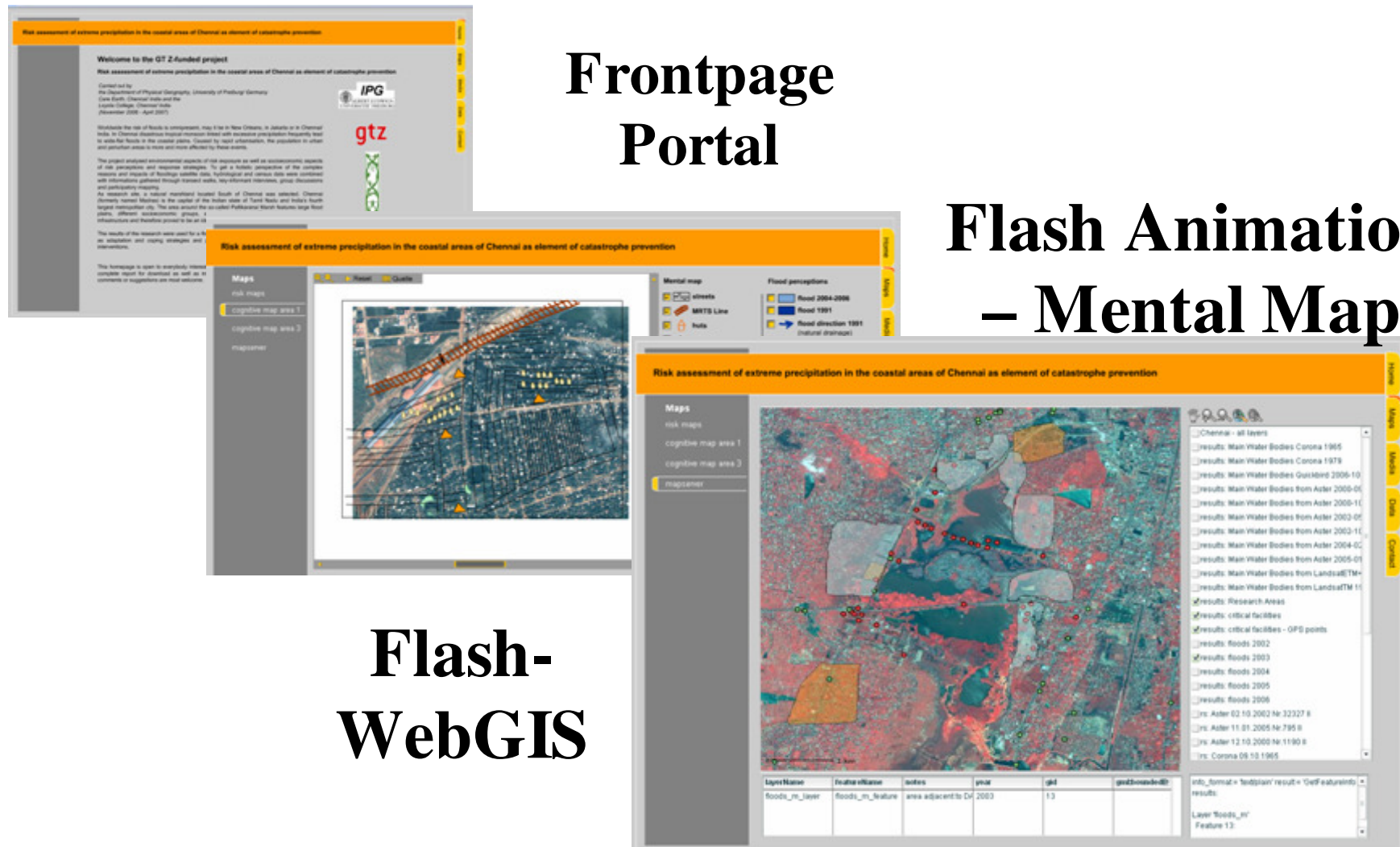
This homepage is open to everybody interested in the project and its findings. It provides the complete report for download as well as interactive maps, fotos and some raw data. Any comments or suggestions are most welcome.

Project Chennai – Geoportal

Frontpage Portal

Flash Animation – Mental Map

Flash- WebGIS



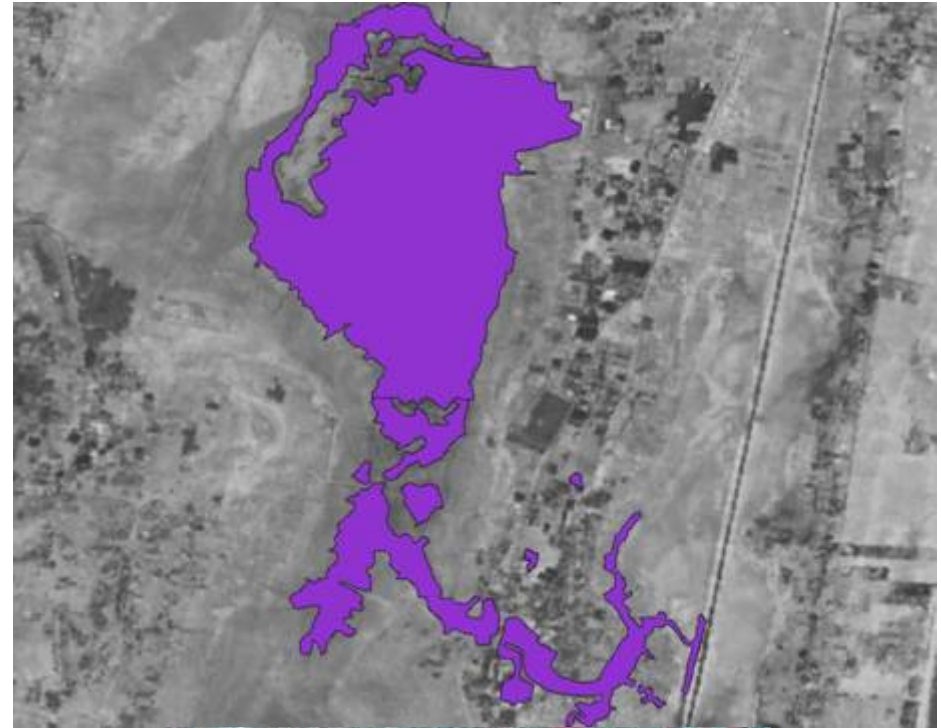
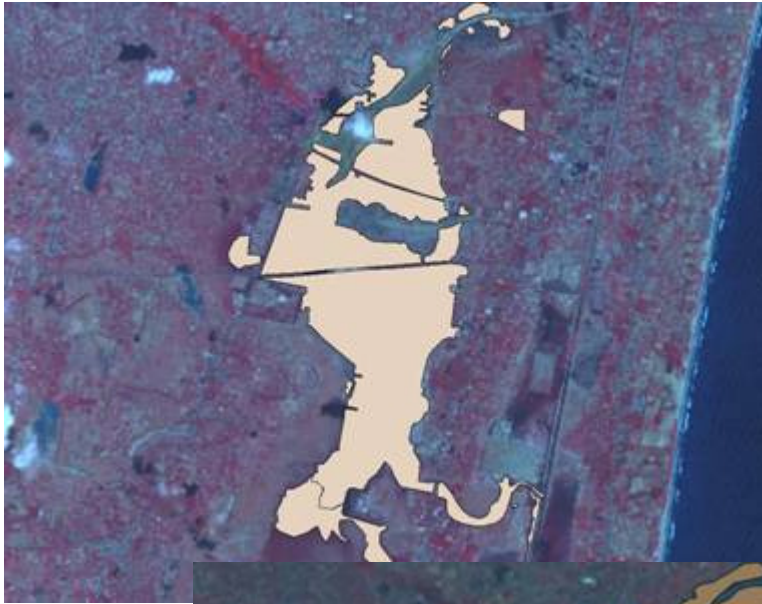
Project Chennai – Flash as Animation-Tool



Periurban development 1965 - 2006



**Extraction of main water body from
satellite imagery
(Corona, Landsat, Aster, Quickbird)**



Projekt Chennai – Flash Photoalbum

- research area 1
- research area 2
- research area 3
- meetings
- Pallikaranai Marsh and surroundings



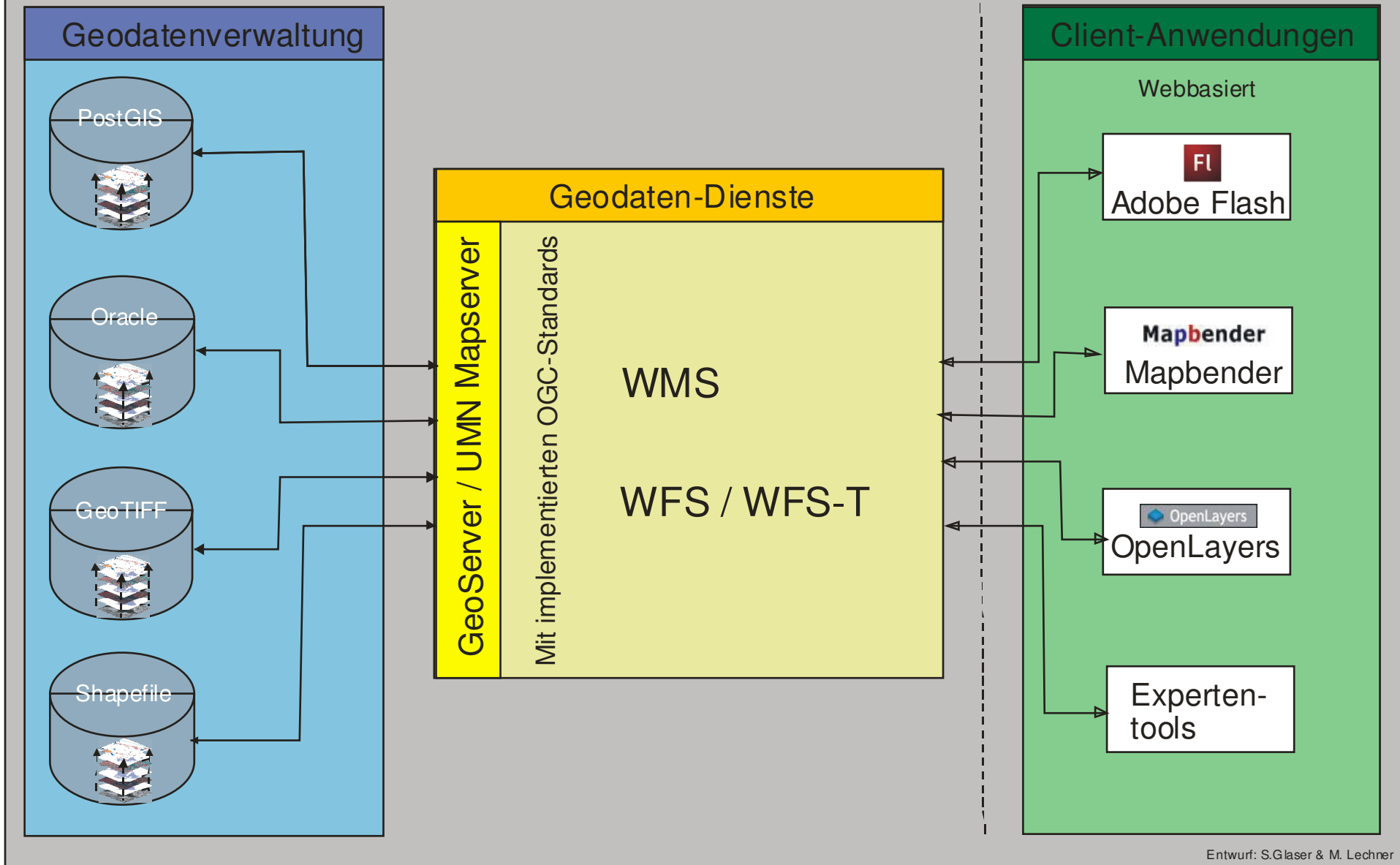
bordering on construction sites

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next >

Aufbau Geokommunikationsportal



Mapbender - input of new flooded areas

careearth - presented by Mapbender - Mozilla Firefox

Datei Bearbeiten Ansicht Chronik Lesezeichen Extras Hilfe

http://www.geographie.uni-freiburg.de

Welcome to the Mapbender Portal careearth - presented by Mapbe...

Logged User: careearth

Mapbender

Maps
Legend
Print
WFS Search
Imprint
Digitize

2003 Tharamani Velachery Road (polygon)
2003 area adjacent to DAV School, Marsh reclaimed to develop as habitation (polygon)

Household adaptation strategies



Photos: Drescher 2006



