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on
CLIMATE CHANGE IMPACTS ON AGRICULTURE AND FORESTRY IN EUROPE

Extreme precipitation totals in 2010 in context of historical precipitation data in Slovakia

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OBJECTIVES

MATERIAL AND METHODS

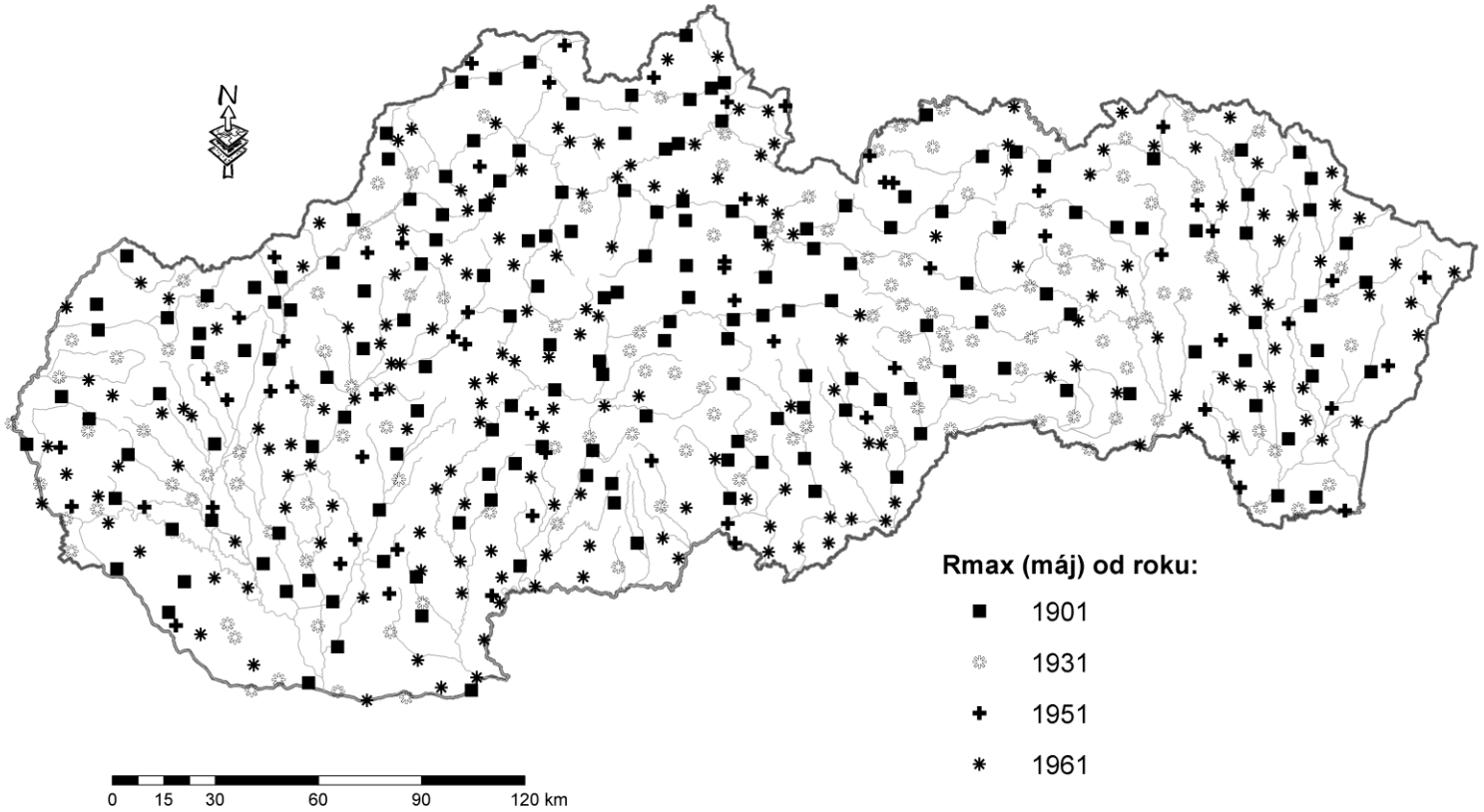
ANNUAL PRECIPITATION ANALYSIS

SYNOPTIC CAUSES OF EXTREME PRECIPITATION IN 2010

EXTREME PRECIPITATION IN MAY AND JUNE 2010

MATERIAL AND METHODS

Availability of precipitation maximum data



MATERIAL AND METHODS

ANNUAL, SEASONAL AND MONTHLY PRECIPITATION SPATIAL ANALYSIS USING GIS

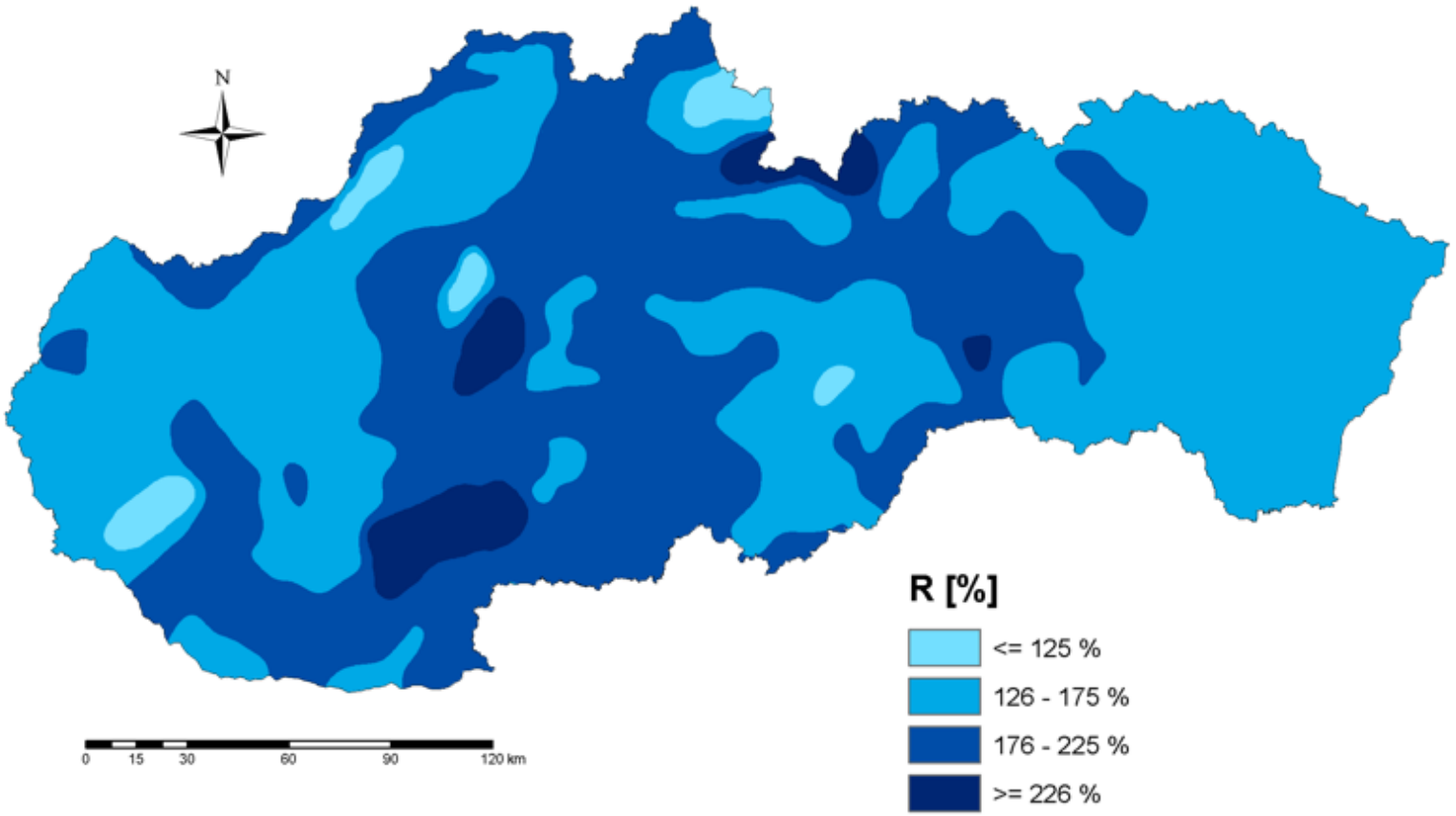
TO ANALYZE SYNOPTIC CONDISTIONS OF EXTREME RAINFALL EVENTS WE USED THE OUTPUTS OF ECMWF 24-HOUR PRECIPITATION FIELD (SEA LEVEL PRESURE FIELD)

TIME SERIES OF ANNUAL AND MONTHLY AREAL PRECIPITATION IN THE 1881-2010 PERIOD

TEMPERATURE CORRELATION ANALYSIS

ANNUAL PRECIPITATION IN 2010

Summer 2010 precipitation in % of 61-90 normal



SYNOPTIC CONDITIONS OF EXTREME PRECIP. IN 2010

PRECIPITATION TOTALS WERE ABOVE-NORMAL IN ALMOST ALL MONTHS IN 2010

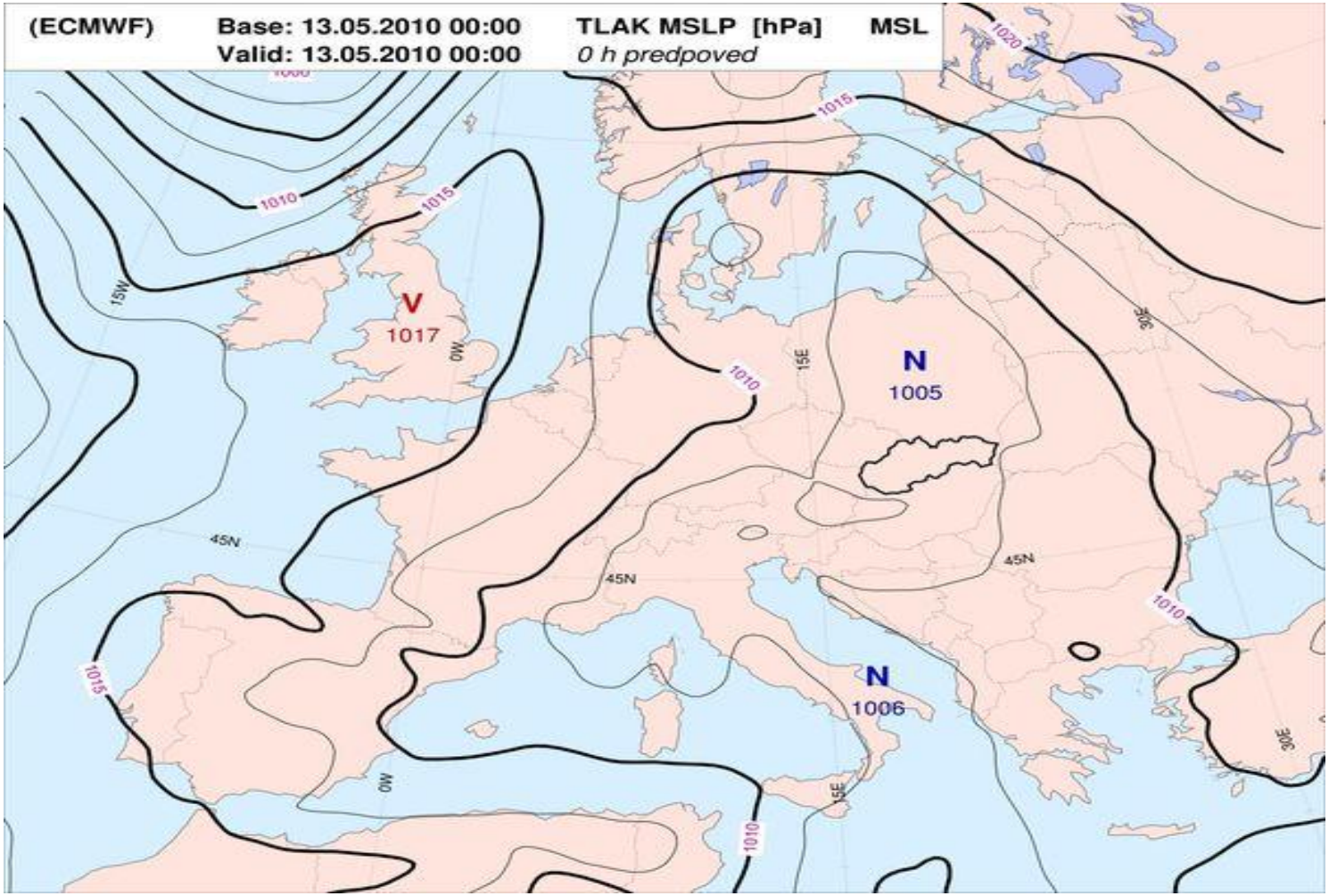
THE FLOOD SITUATIONS IN APRIL, MAY AND JUNE 2010 AS A RESULTS OF ABUNDANT PRECIPITATION IN AUTUMN 2009 AND WINTER 2009/2010

SOME PRECIPITATION EXTREME WEATHER SITUATIONS BEFORE MAY 2010 (10.-15. OCT, 22.-25. DEC 2009)

FLOOD GENERATING WEATHER SITUATIONS – 14.-18. MAY, 31. MAY-2. JUNE

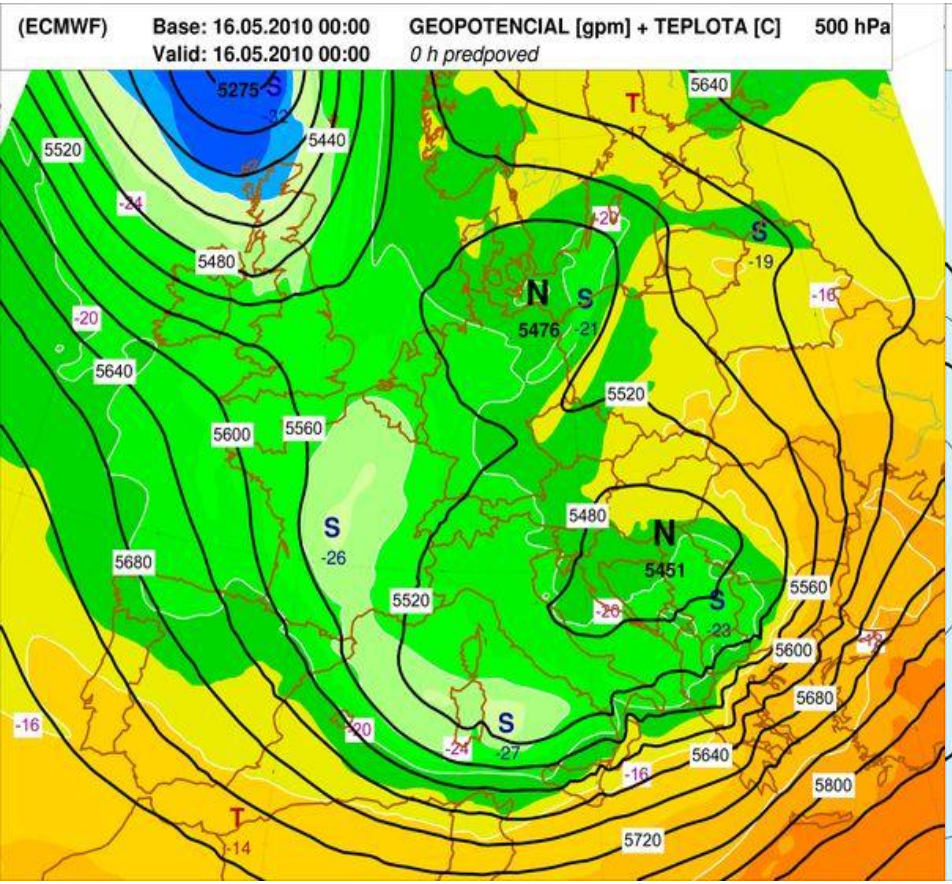
SYNOPTIC CONDITIONS OF EXTREME PRECIP. IN 2010

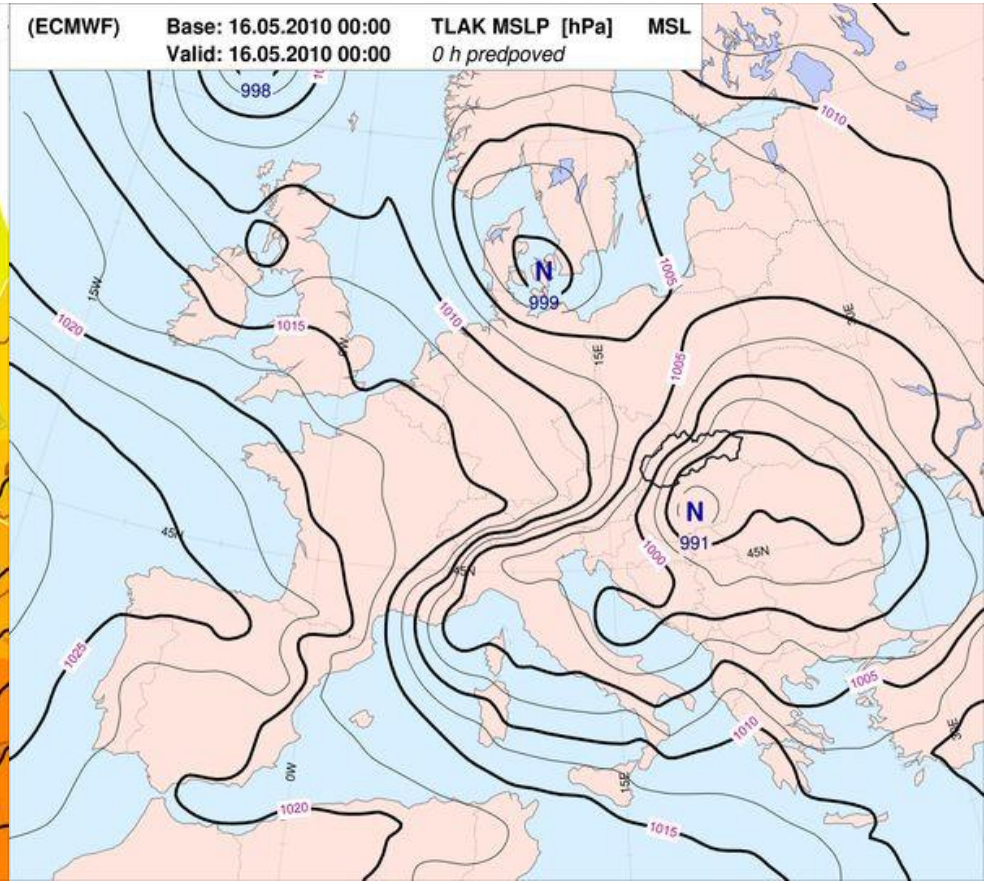
Surface pressure field: 13.-17. MAY 2010



SYNOPTIC CONDITIONS OF EXTREME PRECIP. IN 2010

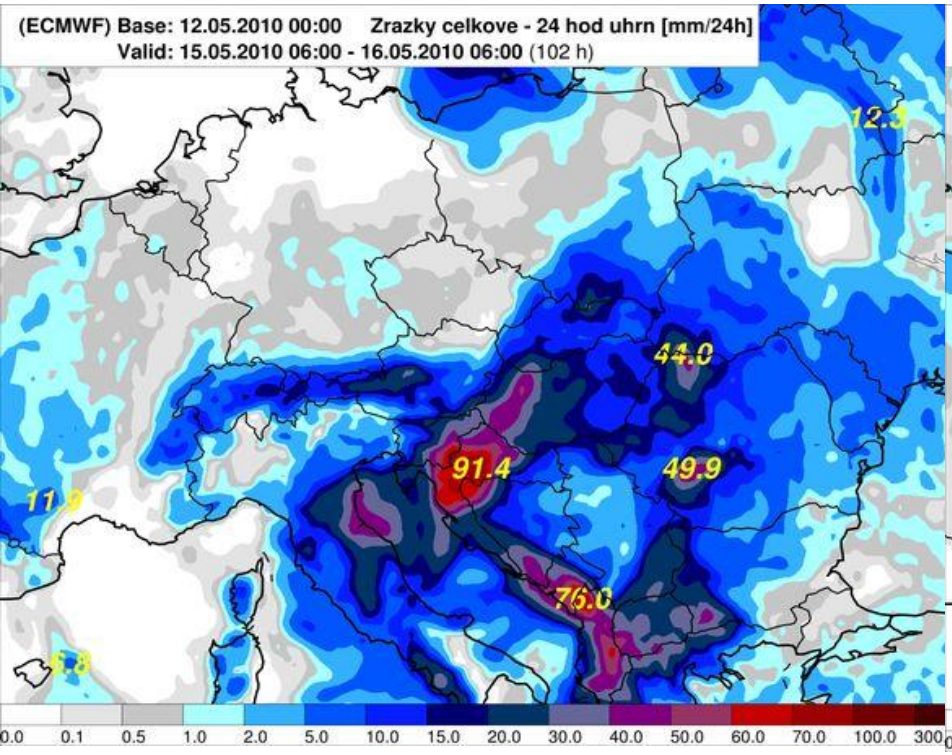
500 hPa level and surface pressure field: 16. MAY 2010

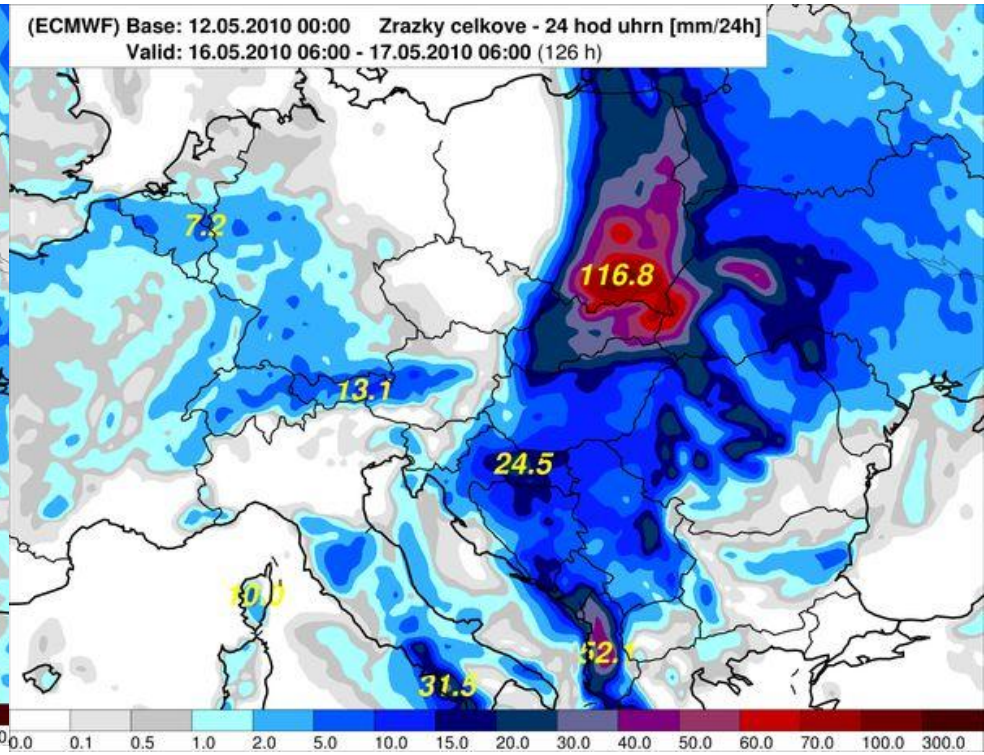




SYNOPTIC CONDITIONS OF EXTREME PRECIP. IN 2010

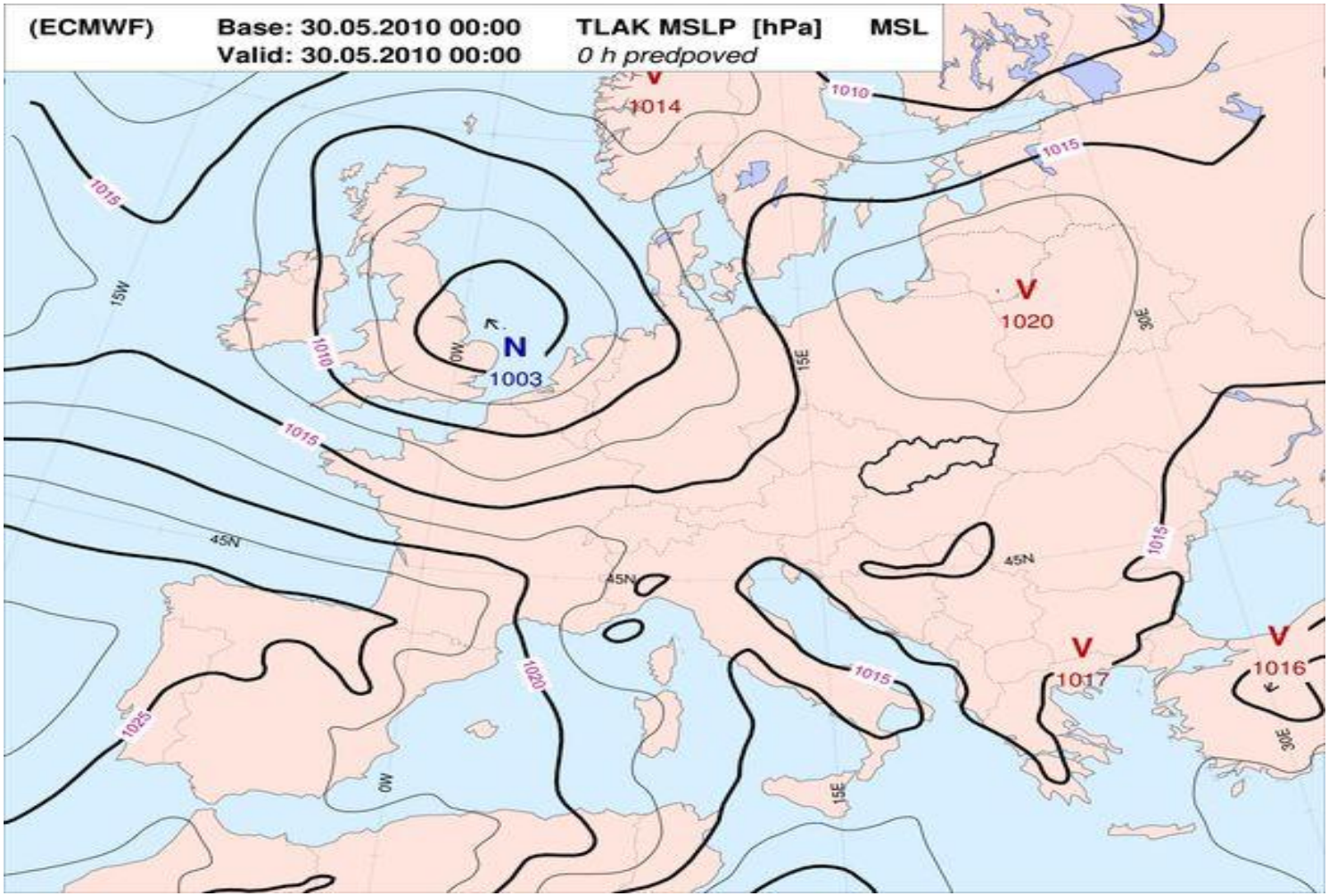
24-hour precipitation prediction from ECMWF (16.-17. MAY 2010)





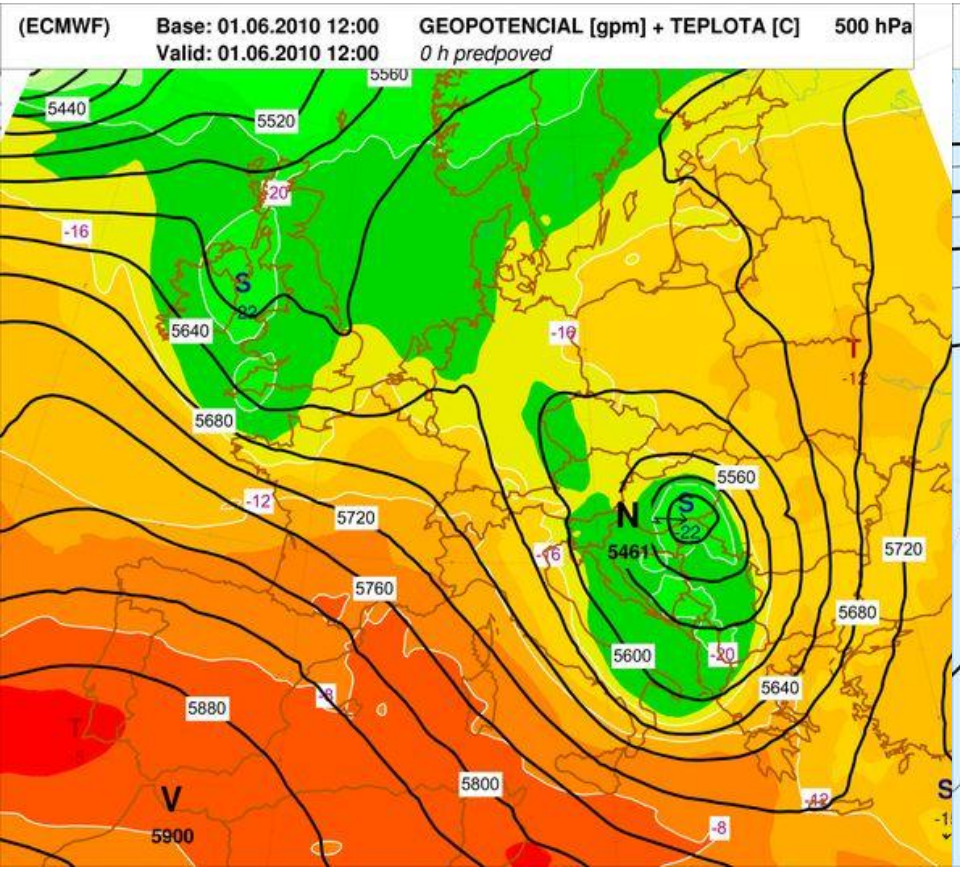
SYNOPTIC CONDITIONS OF EXTREME PRECIP. IN 2010

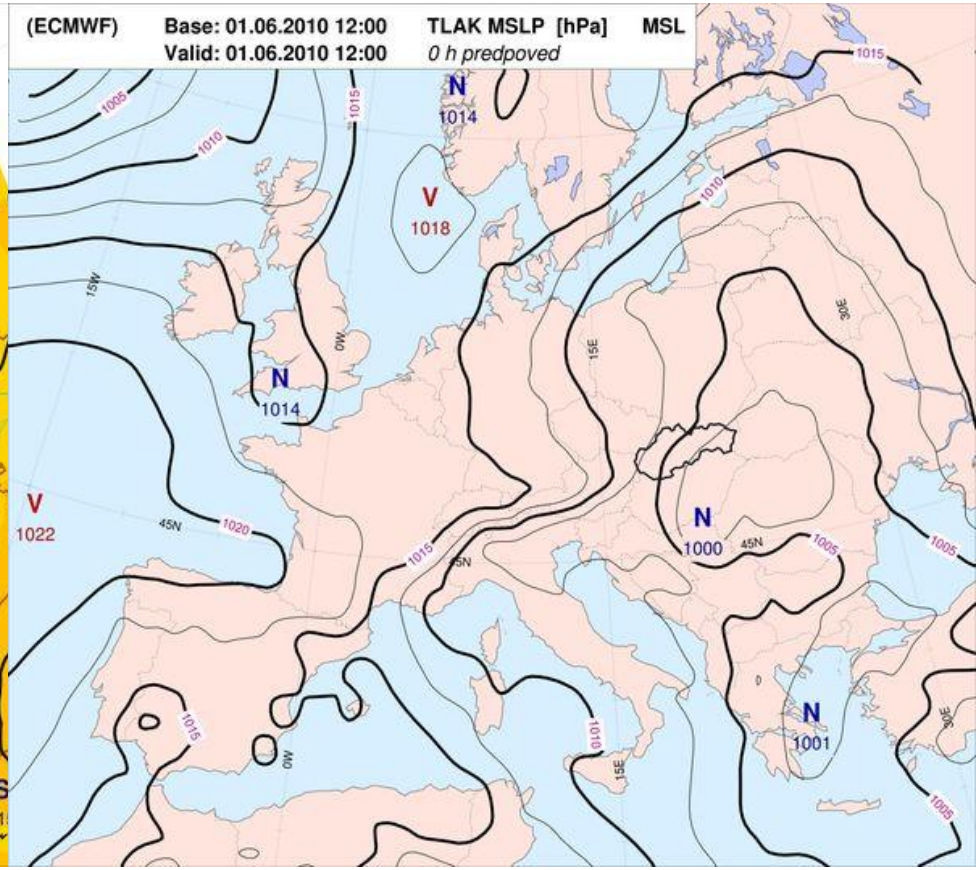
Surface pressure field: 30. MAY - 3. JUNE 2010



SYNOPTIC CONDITIONS OF EXTREME PRECIP. IN 2010

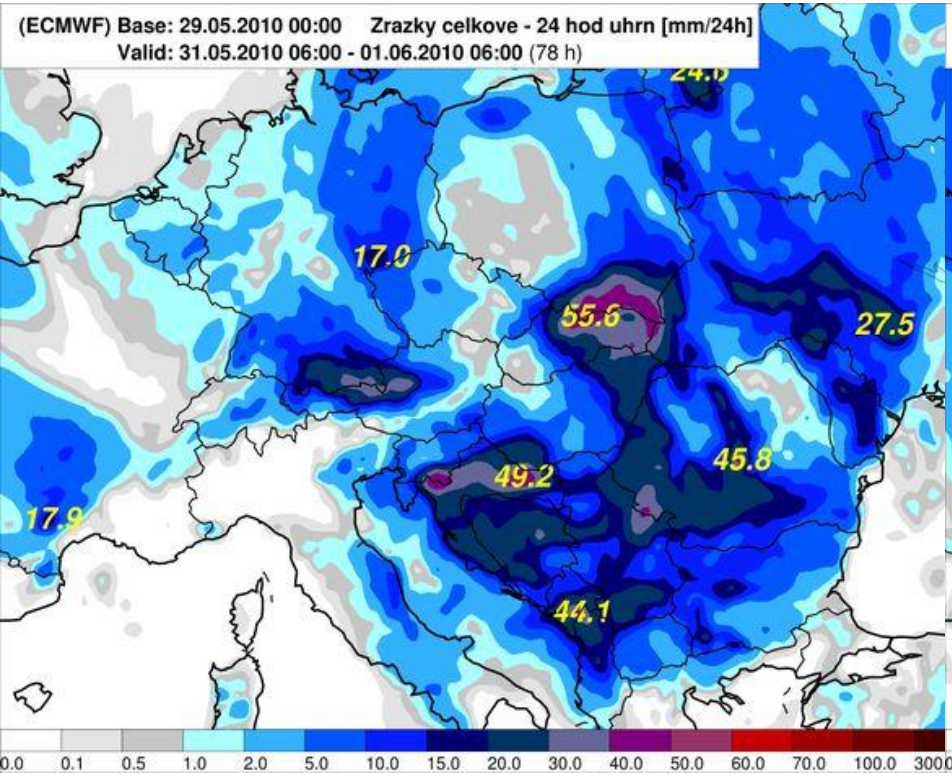
500 hPa level and surface pressure field: 1. JUNE 2010

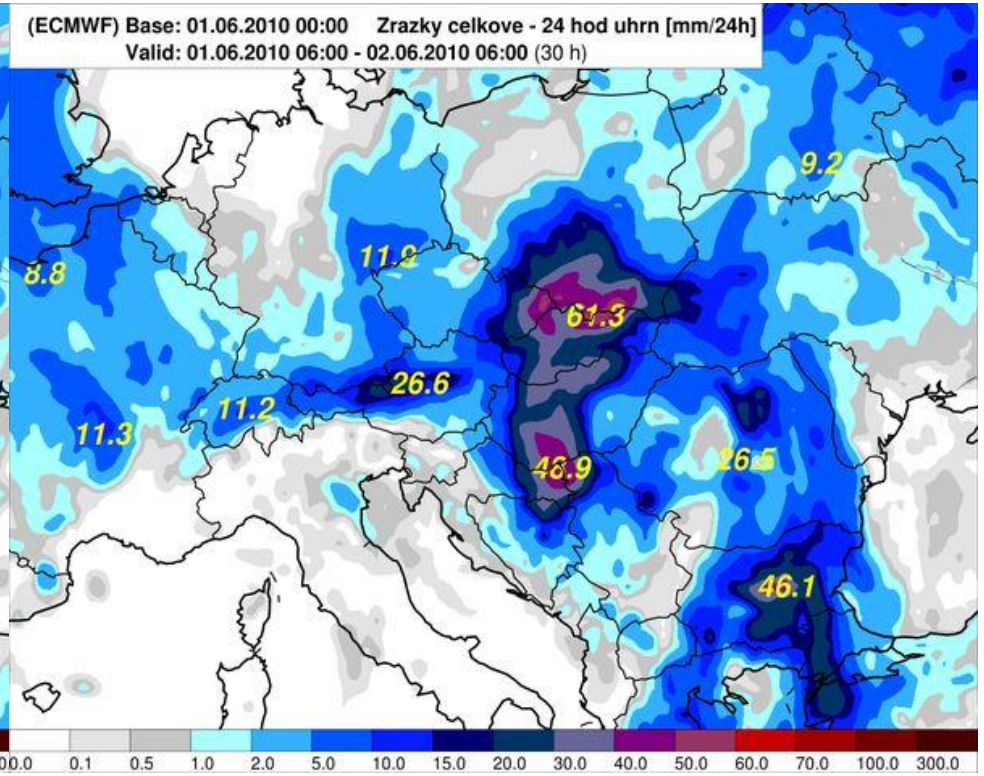




SYNOPTIC CONDITIONS OF EXTREME PRECIP. IN 2010

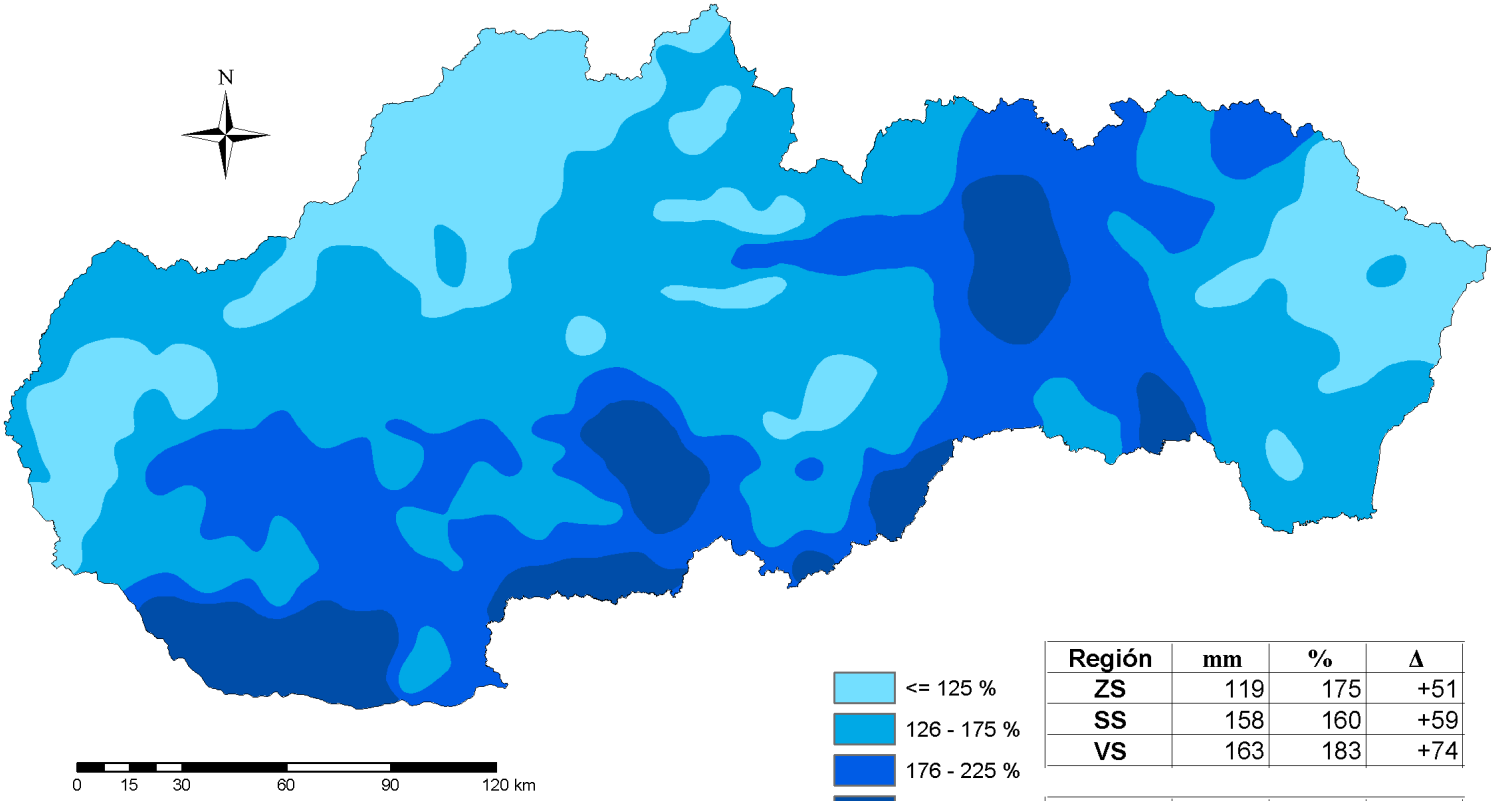
24-hour precipitation prediction from ECMWF (1.-2. JUNE 2010)





EXTREME PRECIPITATION IN MAY AND JUNE 2010

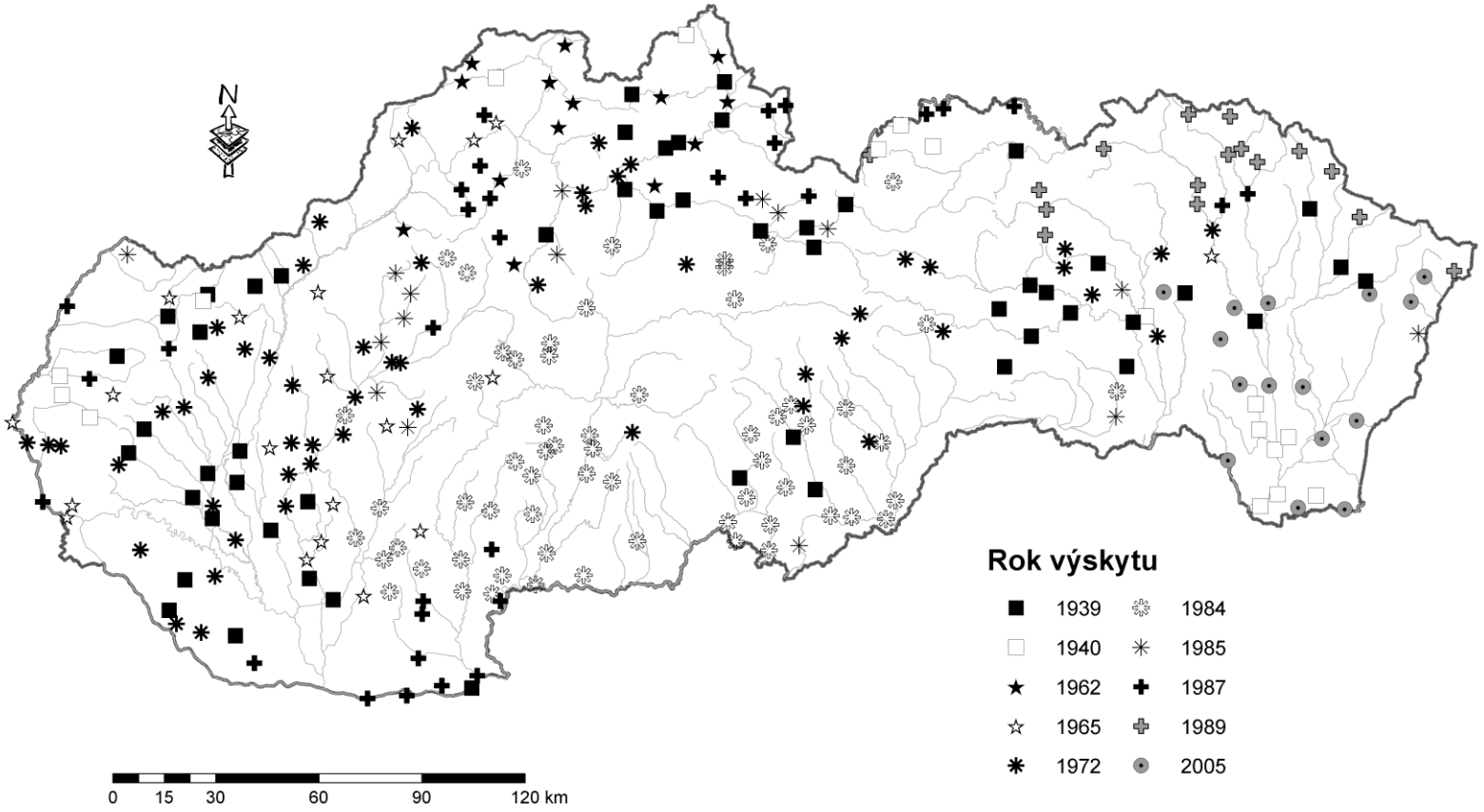
VI 2010



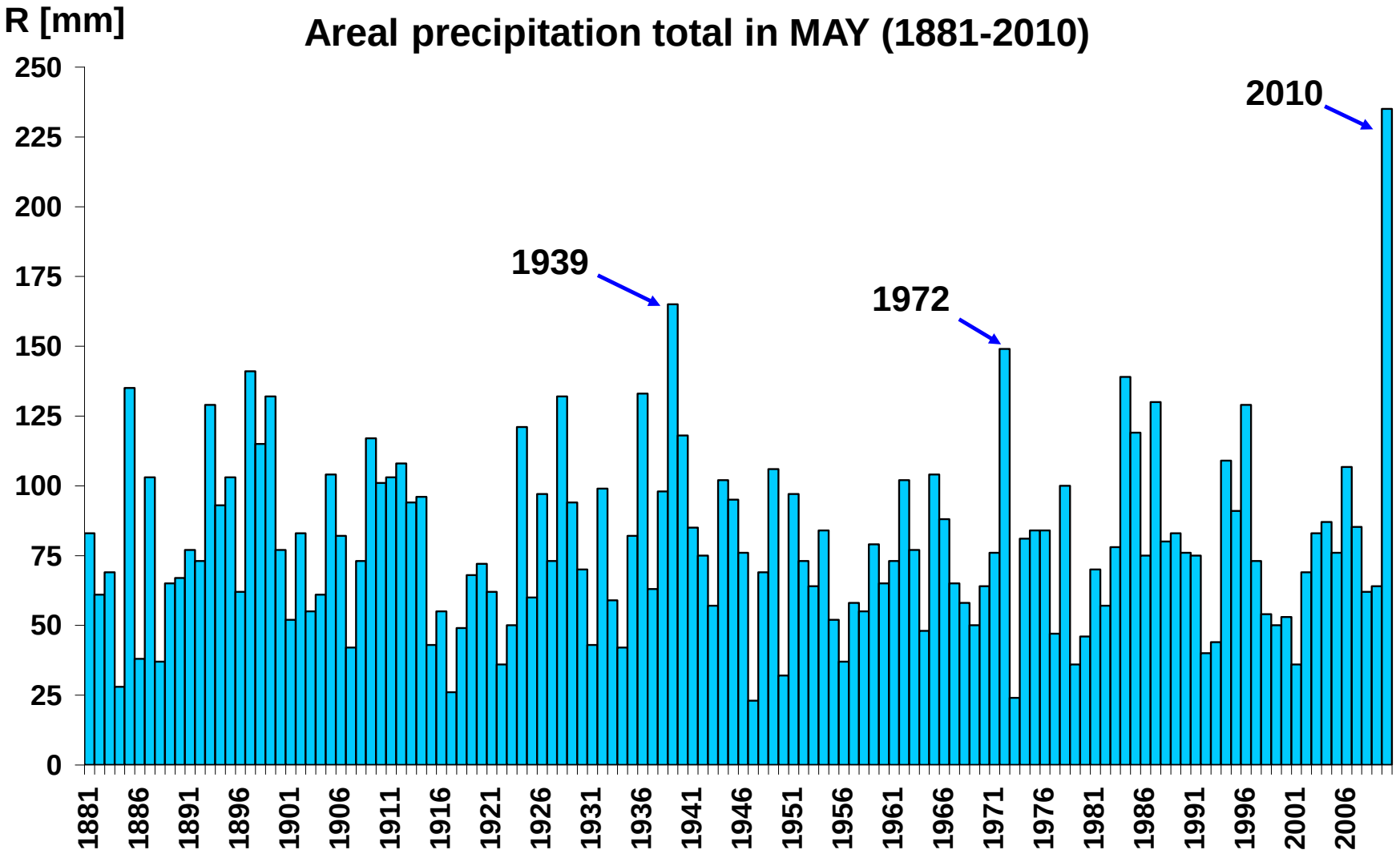
Región	mm	%	Δ
ZS	119	175	+51
SS	158	160	+59
VS	163	183	+74
SR	**148**	**172**	**+62**

EXTREME PRECIPITATION IN MAY AND JUNE 2010

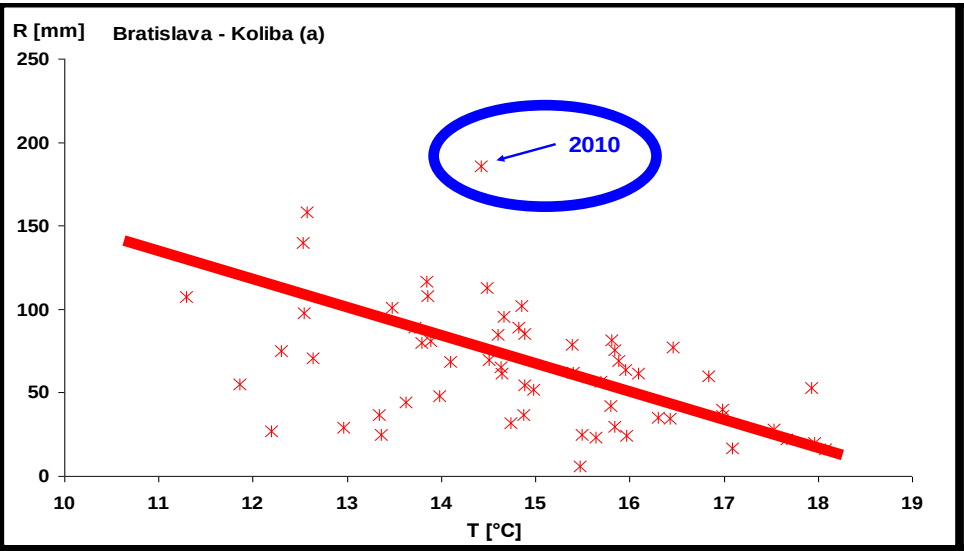
Spatial distribution of previous record-breaking MAY precipitation

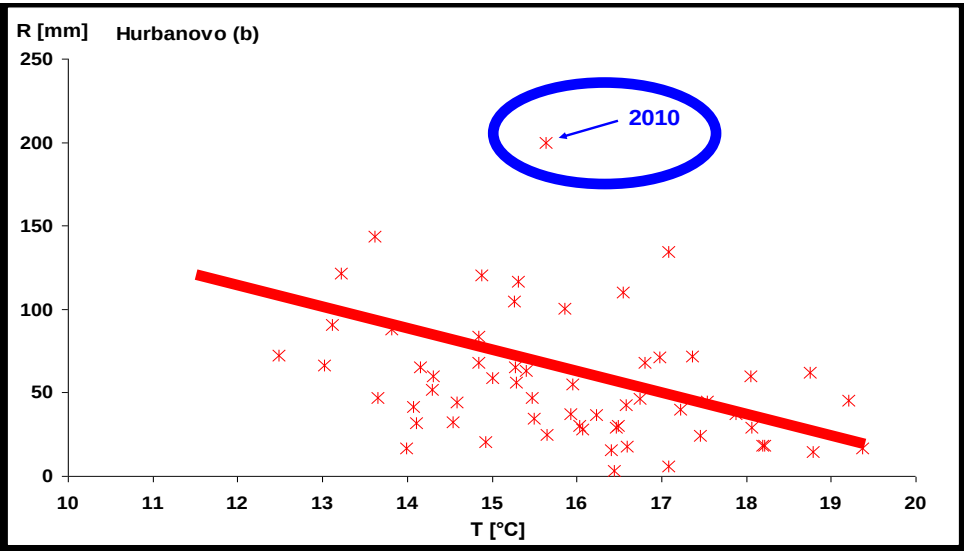


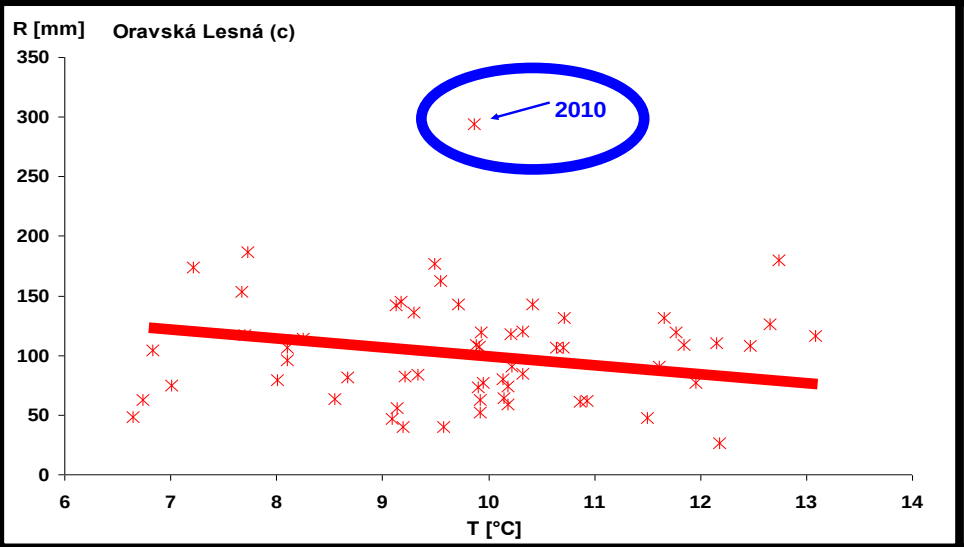
EXTREME PRECIPITATION IN MAY AND JUNE 2010

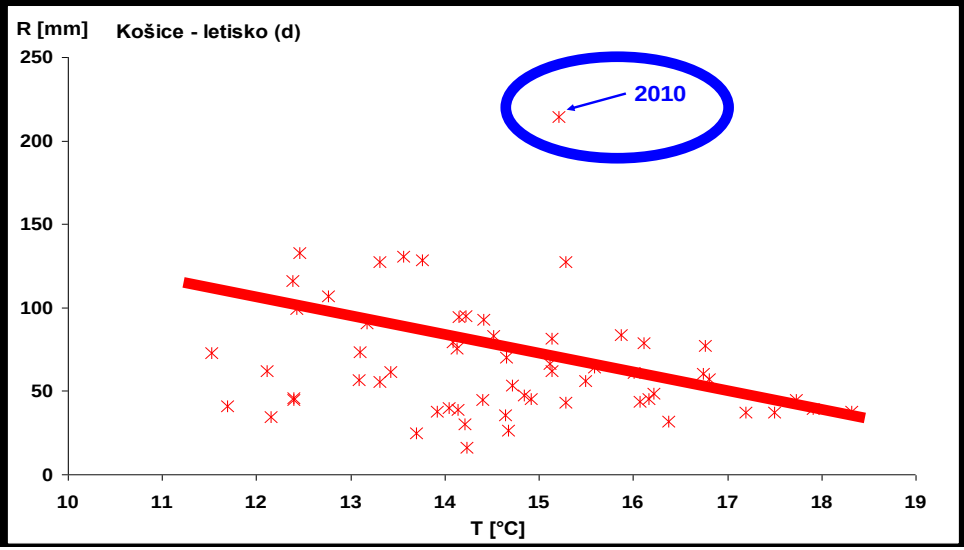


EXTREME PRECIPITATION IN MAY AND JUNE 2010



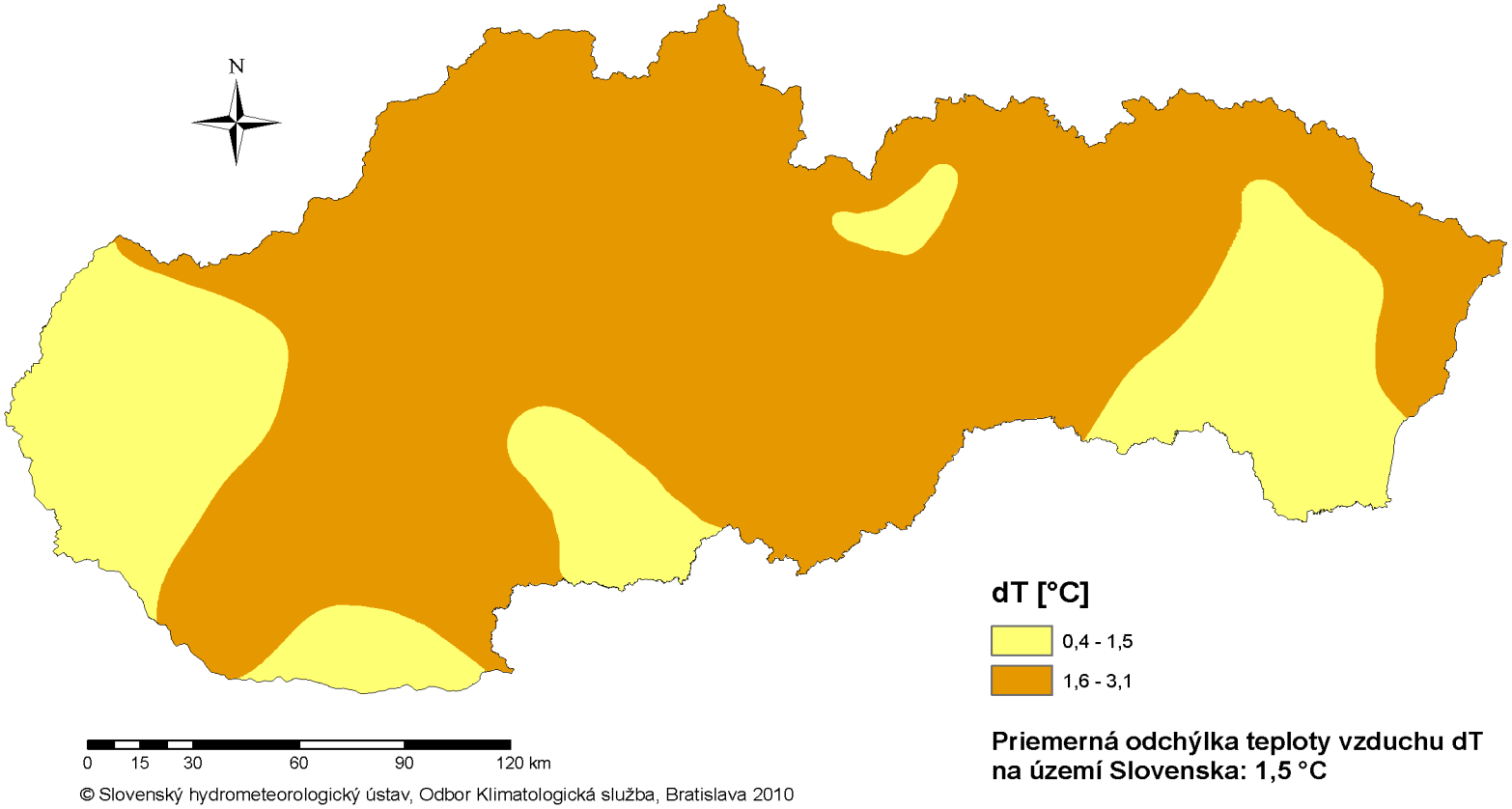






EXTREME PRECIPITATION IN MAY AND JUNE 2010

June 2010 temperature deviation from 61-90 normal



Priemerná odchýlka teploty vzduchu dT na území Slovenska: 1,5 °C

CONCLUSIONS

Numerous regions in Slovakia have been stricken by heavy and extensive rainfalls in May and in early June 2010 caused mostly by cyclonic weather situations.

From the long-term precipitation point of view May 2010 was unprecedently record-breaking (at almost 400 MS May precipitation totals were record-breaking)

The rainfalls in May and June 2010 were characterized by theirs exceptional intensity and overall quantity, moreover they hit repeatedly the most flooding-vulnerable river basins in Slovakia.

Additionally, most of these catchments had been sufficiently water-saturated by previous precipitation events, especially in April 2010

Apart from these facts temperature conditions, particularly in May 2010 were either important (above-normal temp. could contribute to generation of extreme precipitation)

Thank you for your attentions !

Q u e s t i o n s ?