

AT-CZ 167

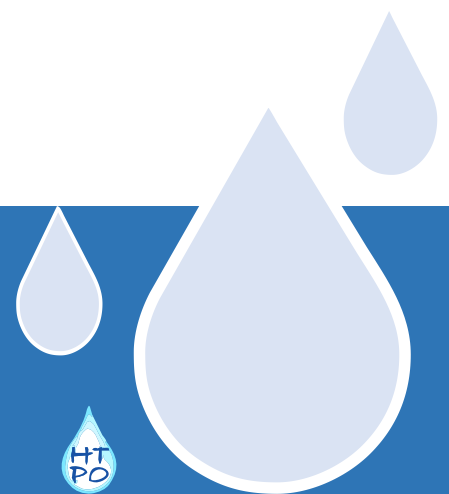
HTPO

„Hydrotermální potenciál oblasti /
Hydrothermales Gebietspotential“

Output T1.1.2

Structural geological - hydrogeological map series
of the thermal water bearing formations in the
region

December 2021



This report was written during the project "HTPO – Hydrothermal Potential of the Area “Laa an der Thaya-Pasohlávký”. Inserting into the project structure is shown in the following table:

WP T1	„Geovědní model výskytu termálních vod v oblasti Laa - Pasohlávký“	„Geowissenschaftliches Modell der Thermalwasservorkommen Laa - Pasohlávký“
Akt. T1.1	„Základní geologický model výskytu termálních vod v oblasti Laa - Pasohlávký“	Geowissenschaftliches Basismodell der Thermalwasservorkommen Laa - Pasohlávký
T1.1.2	„Geotermické mapy výskytu termálních vod v regionu“	„Geothermische Kartenserie der Thermalwasservorkommen in der Region.“

The works prior to this output were realized within the activity T1.1. The explanations for these map series can be found in the output T1.1.3 „multilingual explanations related to the compiled thematic maps”.

The outputs of this study were most relevant for the following activities:

- Activity T1.4 „Dynamic reservoir model of the thermal waters in Laa and Pasohlávký“
- Activity T1.5 „Measures for supporting the transferability of project results“
- Workpackage T2 „Strategic measures for a sustainable and efficient management and utilization of cross-border thermal waters“

More information and other outputs on the project "HTPO – Hydrothermal potential of the area" Laa an der Thaya-Pasohlávký" can be found at:

<https://www.at-cz.eu/cz/ibox/po-2-zivotni-prostredi-a-zdroje/atcz167> httpo

<https://www.at-cz.eu/at/ibox/pa-2-umwelt-und-ressourcen/atcz167> httpo

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INTRODUCTION

The Project HTPO

The HTPO project deals with the origin, potential and joint management measures of cross-border thermal water resources in the Laa - Pasohlávky region. The thermal waters, which are already used for balneological purposes and which occur at depths of well over 1000 meters below the surface of the earth, have significant potential for future tourist or energetic applications and can contribute to the greening of the region.

Aims of the project

The HTPO project therefore aims to describe these thermal water resources in a joint geoscientific model and to evaluate the associated potential uses and conflicts of use. Based on the best possible knowledge of the thermal water resources in the region, strategies and concrete measures for future joint management are to be worked out together with decision-makers and regional stakeholders.

Aims of activity T1.1

As part of activity T1.1, existing geoscientific archive data are collected, processed and harmonized across borders (e.g. adaptation of formats). In addition, further data, in particular water samples from the existing deep waters, are collected and analysed in a harmonized measurement campaign. As part of the cooperation, cross-border geological and geoscientific basic models (stationary process models) are then set up, which are then subjected to a joint assessment (e.g. zoning of hydrostratigraphic systems or calculation of the expected reservoir temperatures and salinity) and a joint interpretation (e.g. identification of circulation systems and migration paths of the thermal waters in the border region). The determined results are made available to the regional stakeholders of the project as map series.

Geothermal map series

Geothermal and hydrochemical basic data are summarized in cross-border maps. The topics presented include reservoir temperature and total mineralisation of waters (TDS). The explanations for these map series can be found in the output T1.1.3 „multilingual explanations related to the compiled thematical maps”.

1. TEMPERATURE MAPS

1.1 TEMPERATURE OF GEOLOGICAL FORMATION

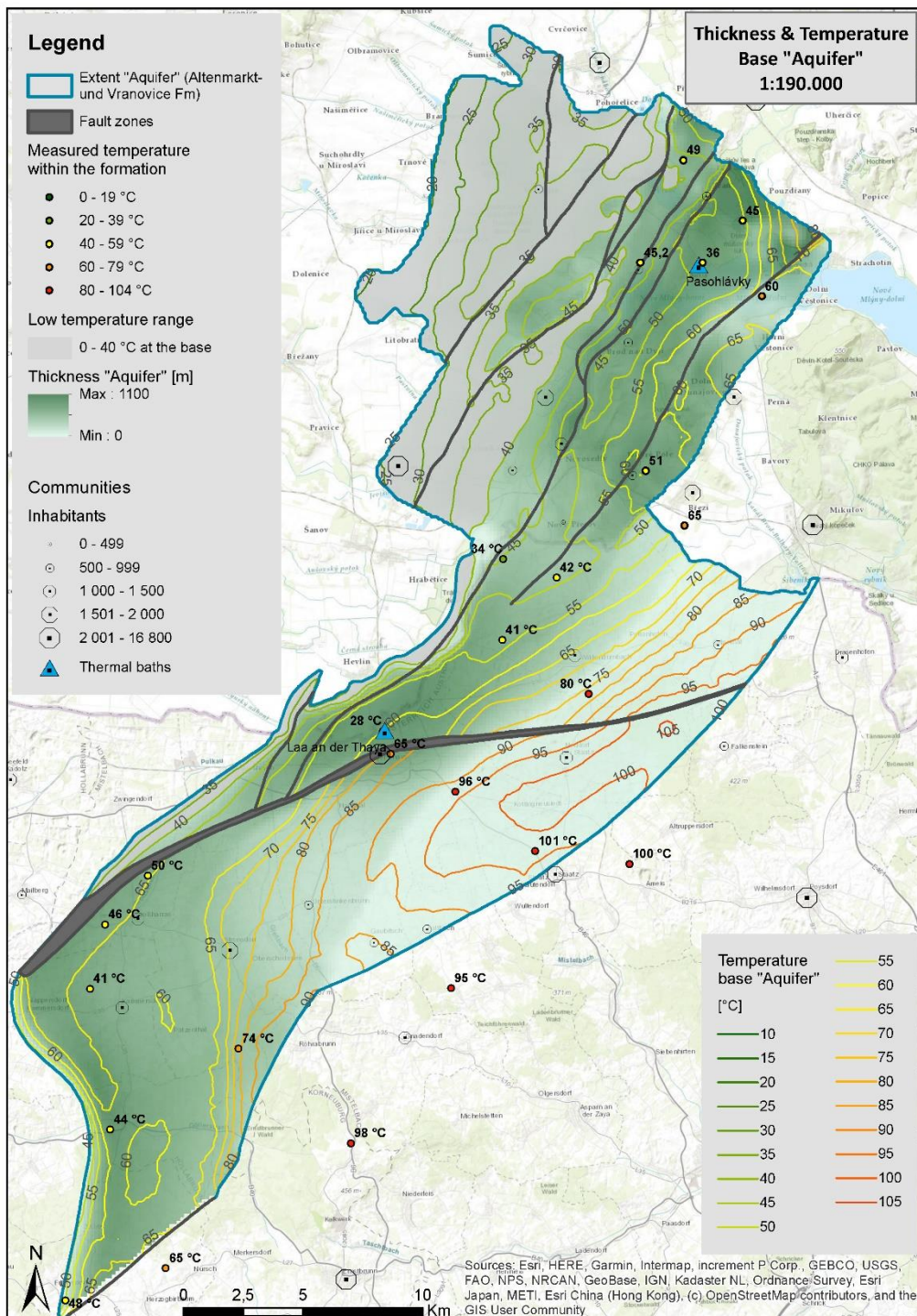


Figure 1: Map of the thickness and temperature of the base „Aquifer“ – the base of the Altenmarkt and Vranovice Formation in the scale of 1:190.000. Temperature was calculated using an average geothermal gradient of 27 °C/km.

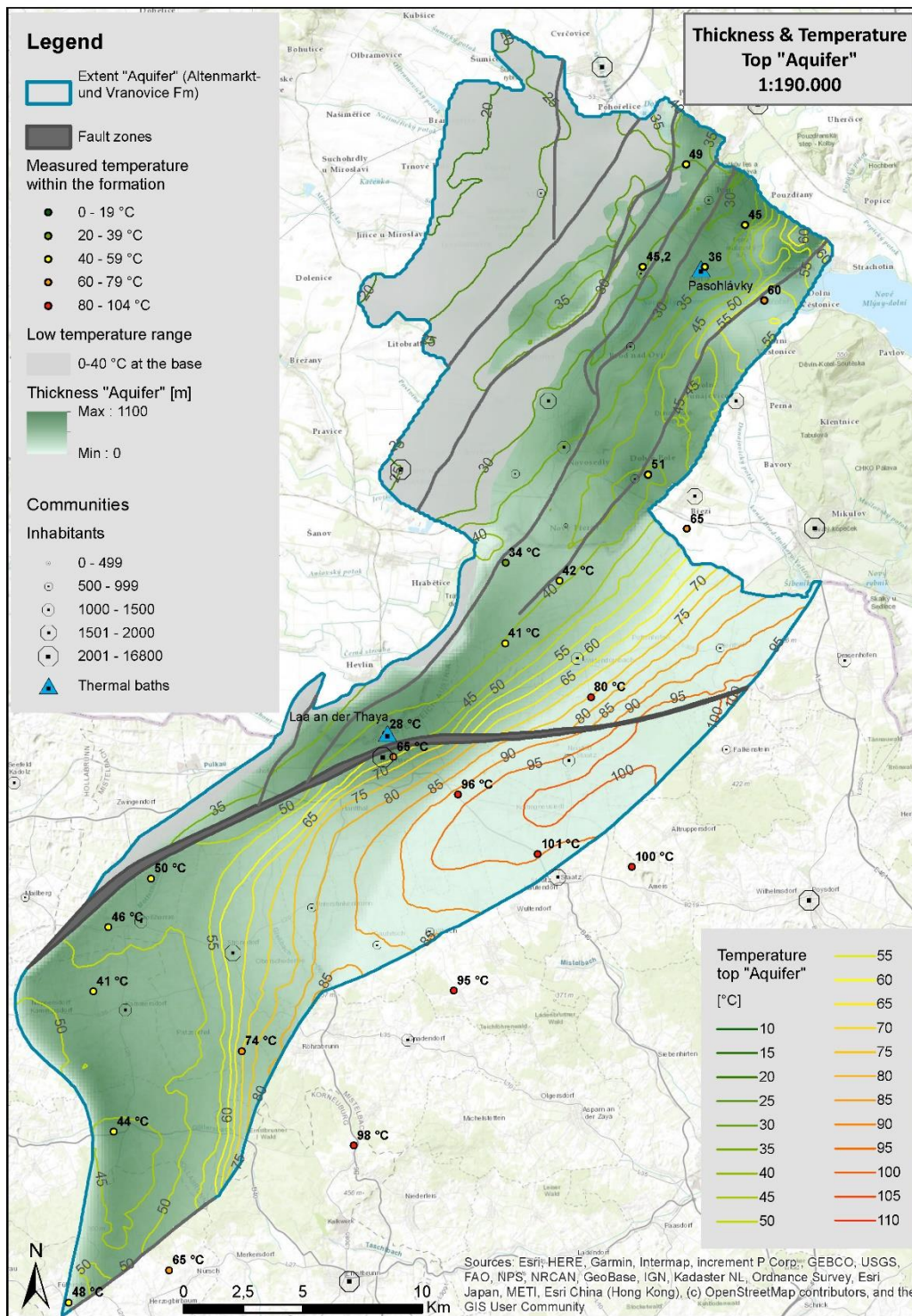


Figure 2: Map of the thickness and temperature of the top „Aquifer“– the top of Altenmarkt- and Vranovice Formation in the scale of 1:190.000. Temperature was calculated using an average geothermal gradient of 27 °C/km.

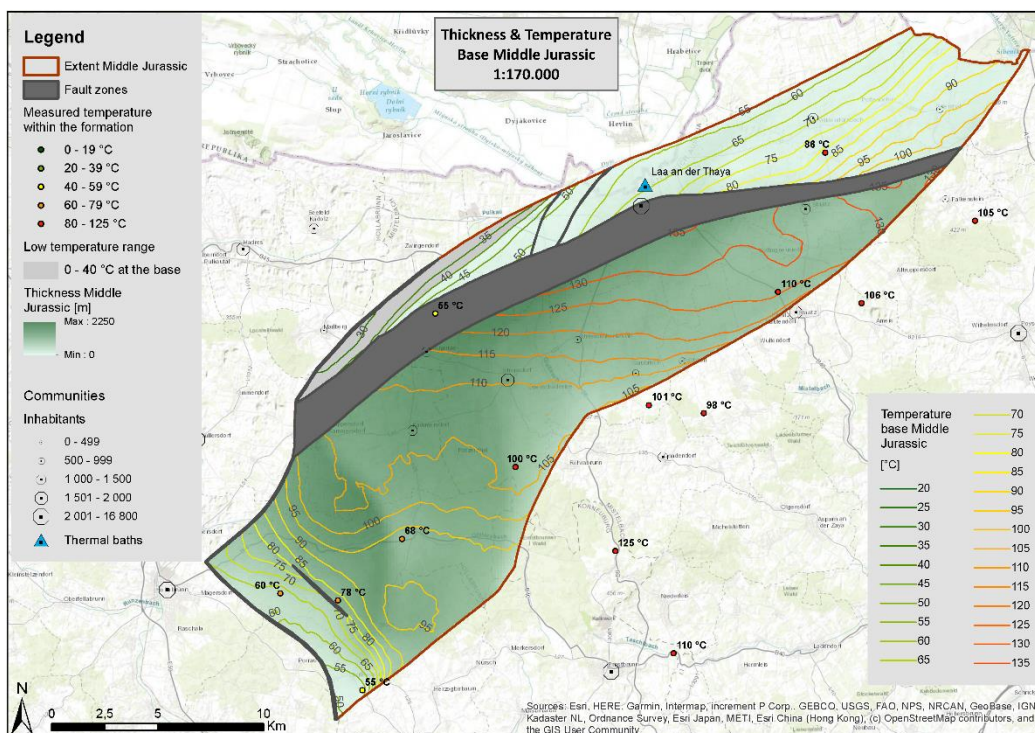


Figure 3: Map of the thickness and temperature of the base Middle Jurassic in the scale of 1:170.000. Temperature was calculated using an average geothermal gradient of 27 °C/km.

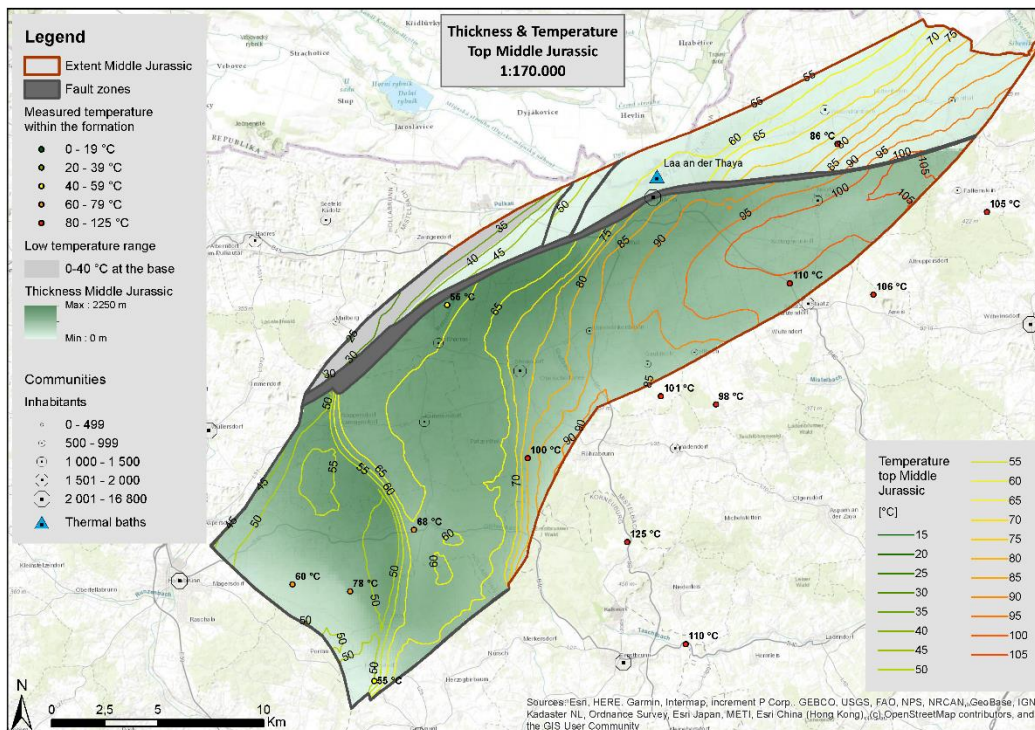


Figure 4: Map of the thickness and temperature of the top Middle Jurassic in the scale of 1:170.000. Temperature was calculated using an average geothermal gradient of 27 °C/km

1.2 TEMPERATURE OF MODELLED AQUIFER SYSTEM

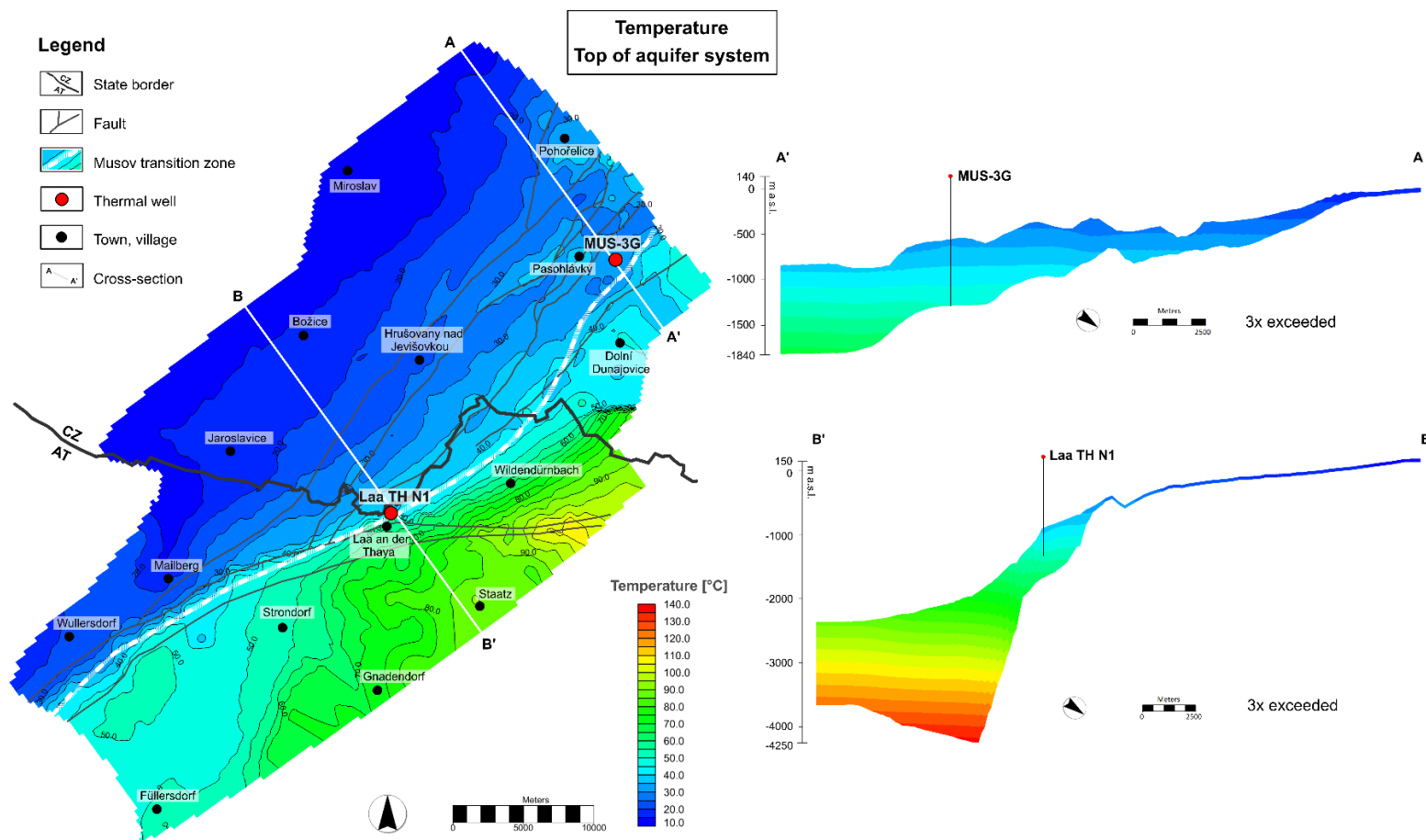


Figure 5: Map of spatial distribution of temperature on the top of modelled aquifer system with two cross-sections of NW—SE direction. The cross-sections AA' and BB' cuts the modelled aquifer in the close vicinity of the thermal wells MUS-3G (AA') and Laa TH N1 (BB') and shows the development of temperature in both areas.

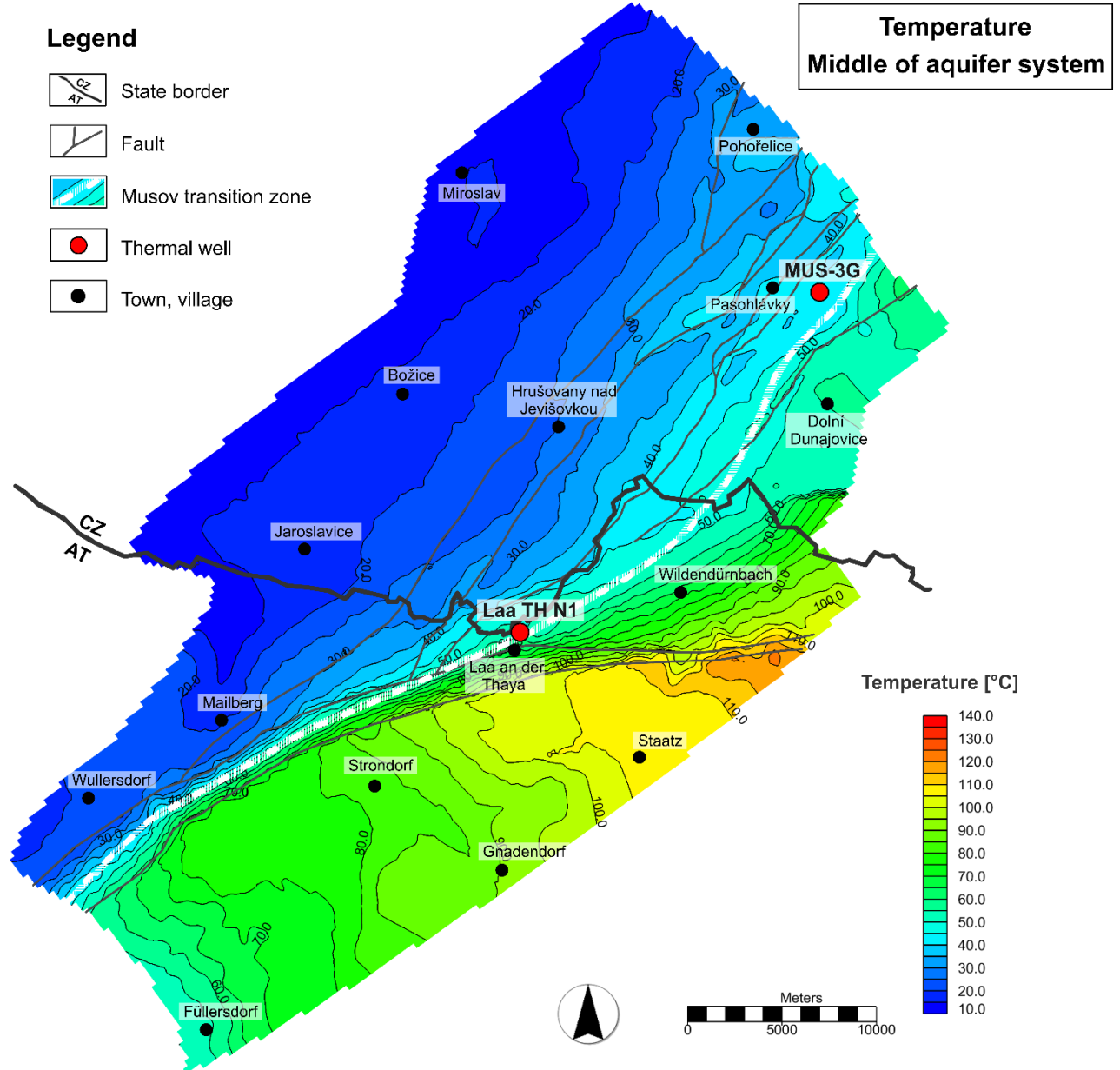


Figure 6: Map of spatial distribution of temperature in the middle of modelled aquifer system.

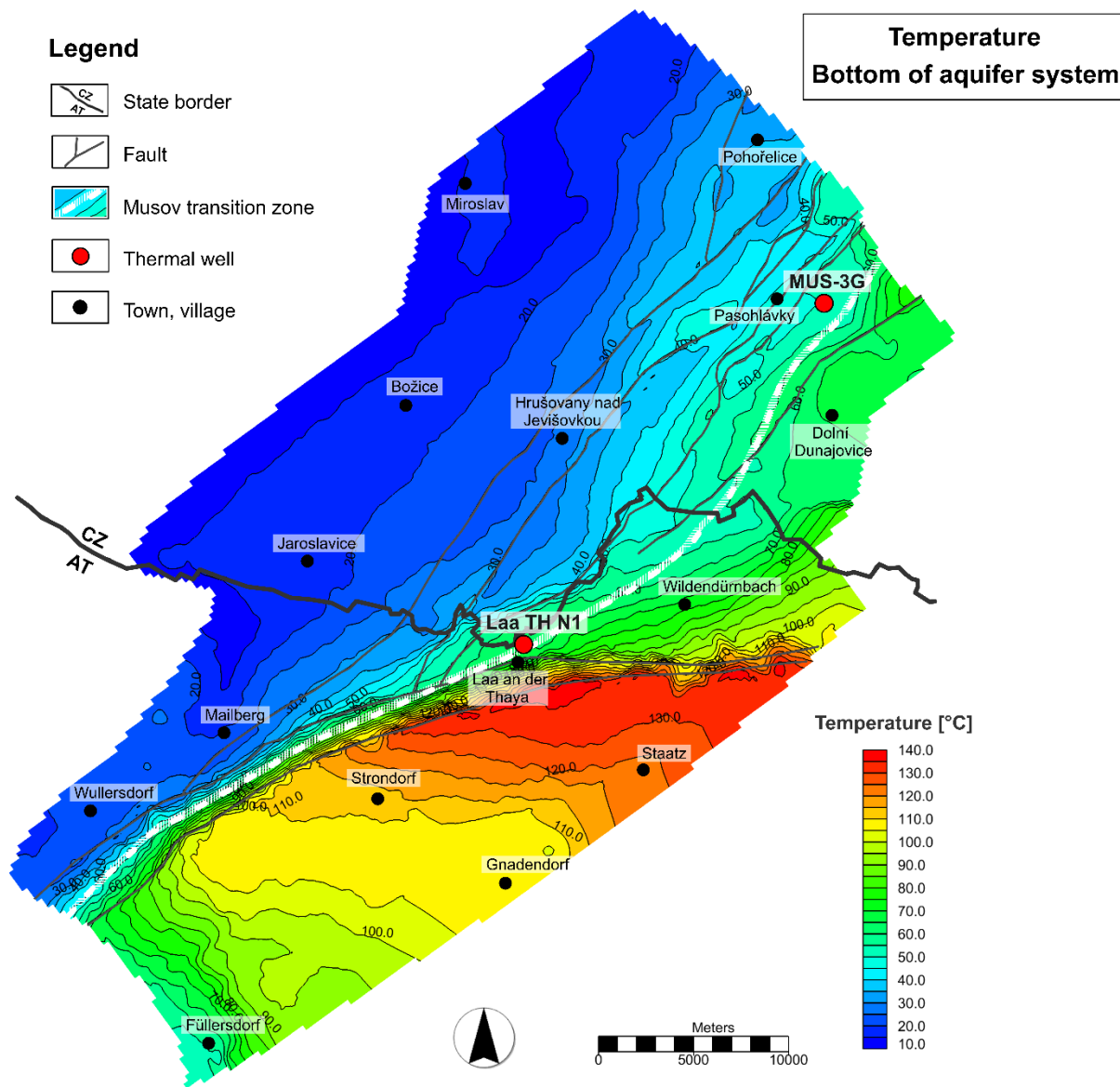


Figure 7: Map of spatial distribution of temperature on the bottom of modelled aquifer system.

1.2.1 HEAT FLOW AND THERMAL CIRCULATION PATHS

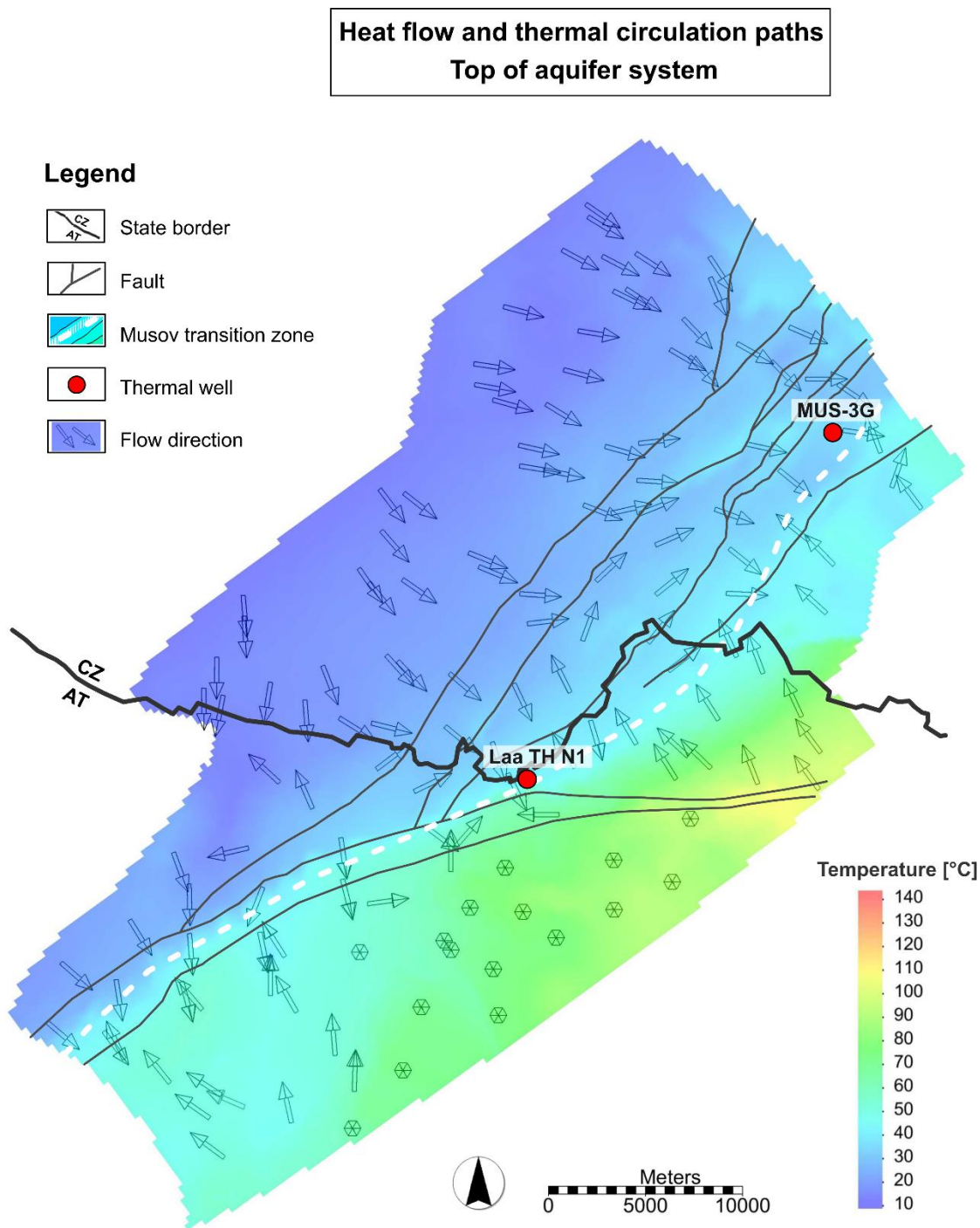


Figure 8: Map of heat flow with thermal circulation paths on the top of aquifer system.

**Heat flow and thermal circulation paths
 Middle of aquifer system**

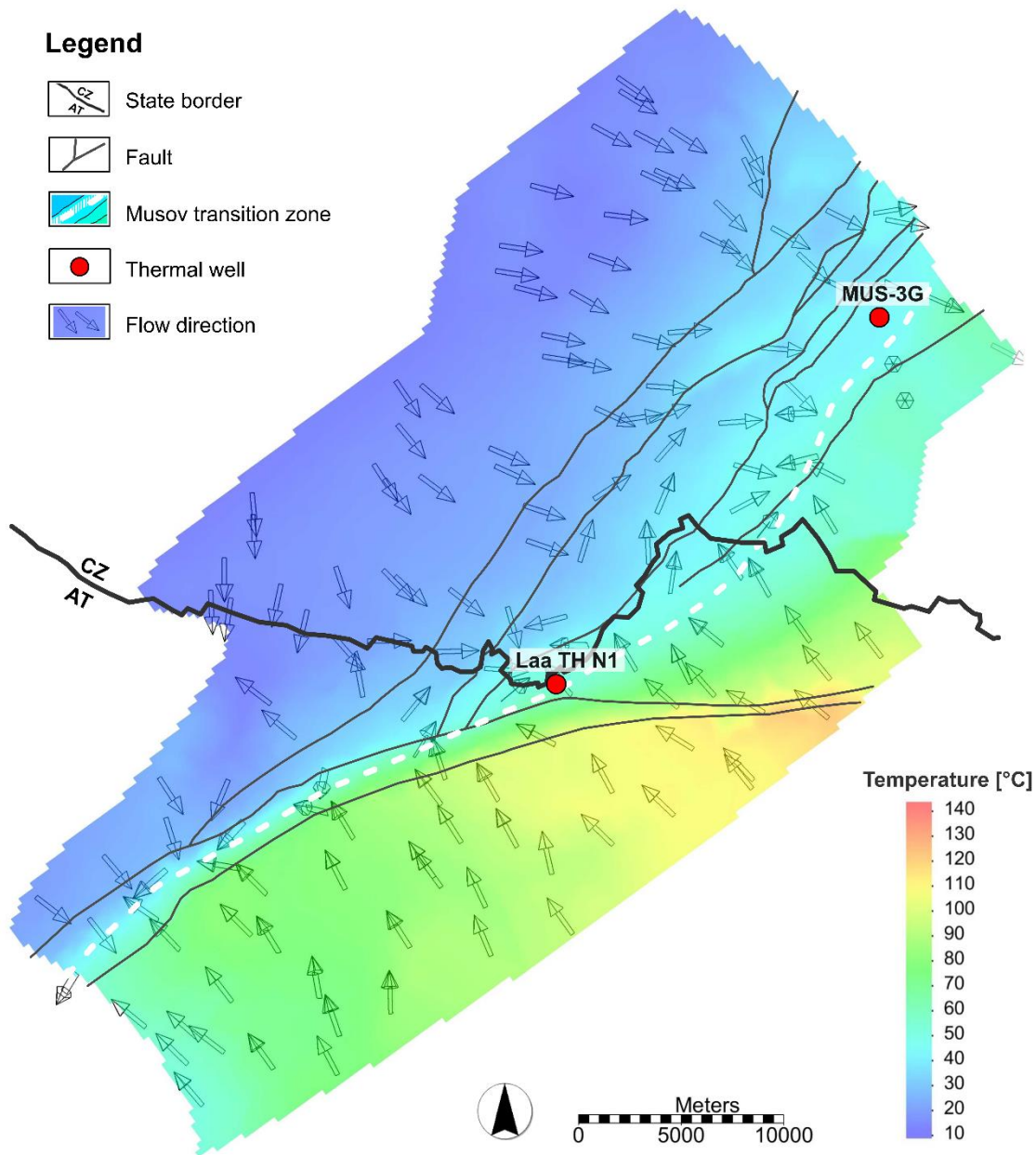


Figure 9: Map of heat flow with thermal circulation paths in the middle of aquifer system.

**Heat flow and thermal circulation paths
 Bottom of aquifer system**

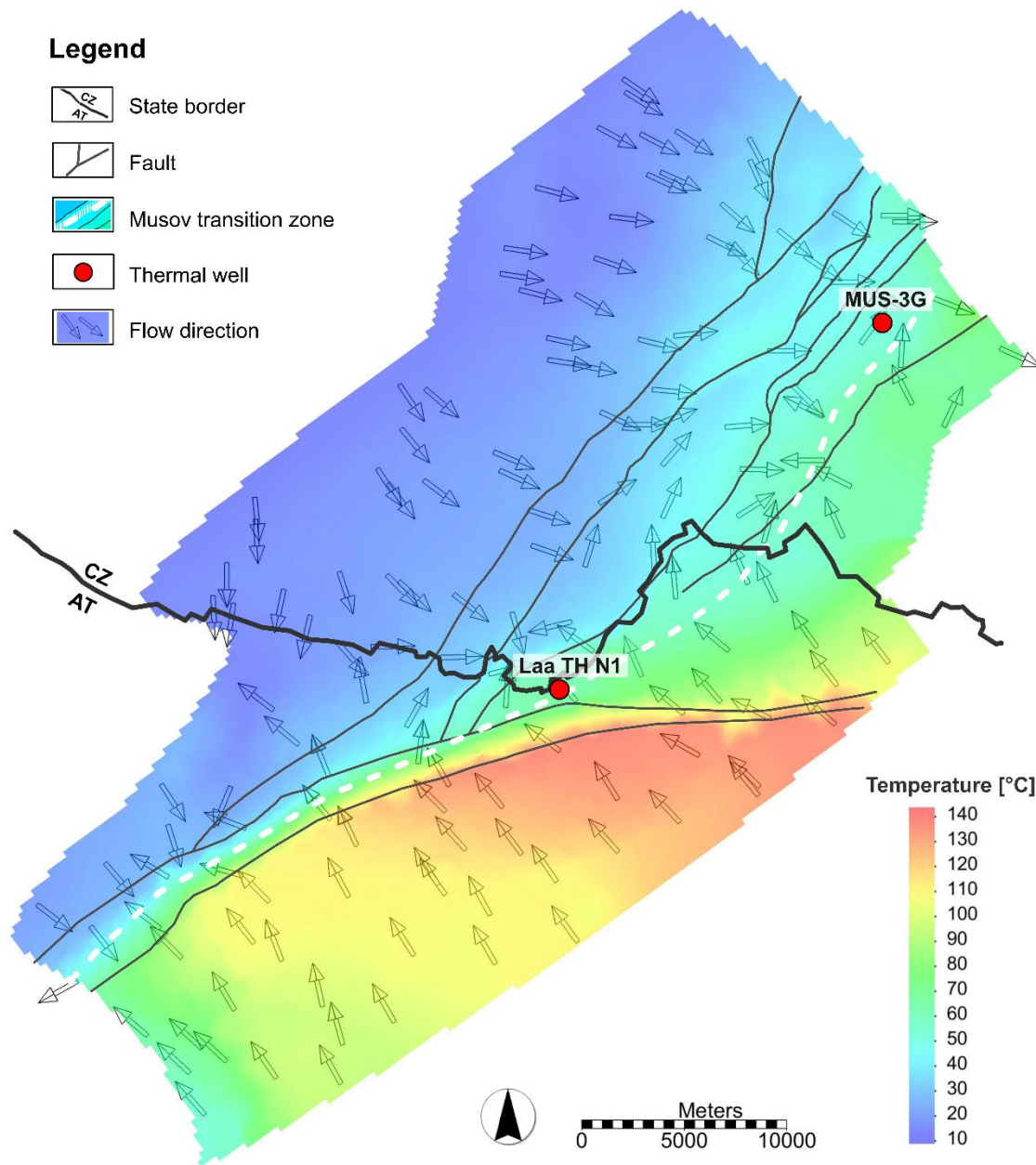


Figure 10: Map of heat flow with thermal circulation paths on the bottom of aquifer system.

2. TDS MAPS

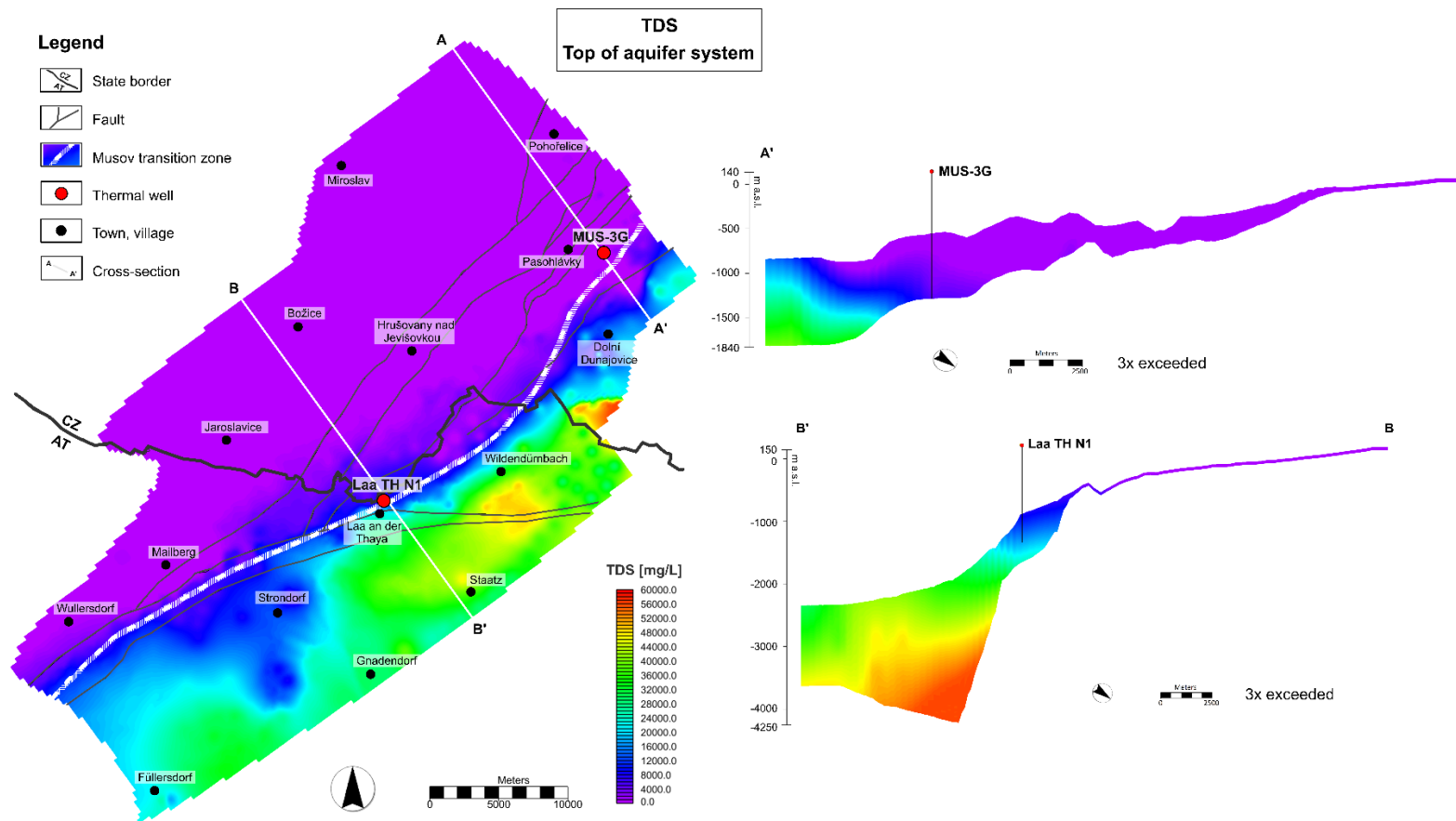


Figure 11: Map of spatial distribution of total mineralisation of waters on the top of modelled aquifer system with two cross-sections of NW—SE direction. The cross-sections AA' and BB' cuts the modelled aquifer in the close vicinity of the thermal wells MUS-3G (AA') and Laa TH N1 (BB') and shows the development of TDS in both areas.

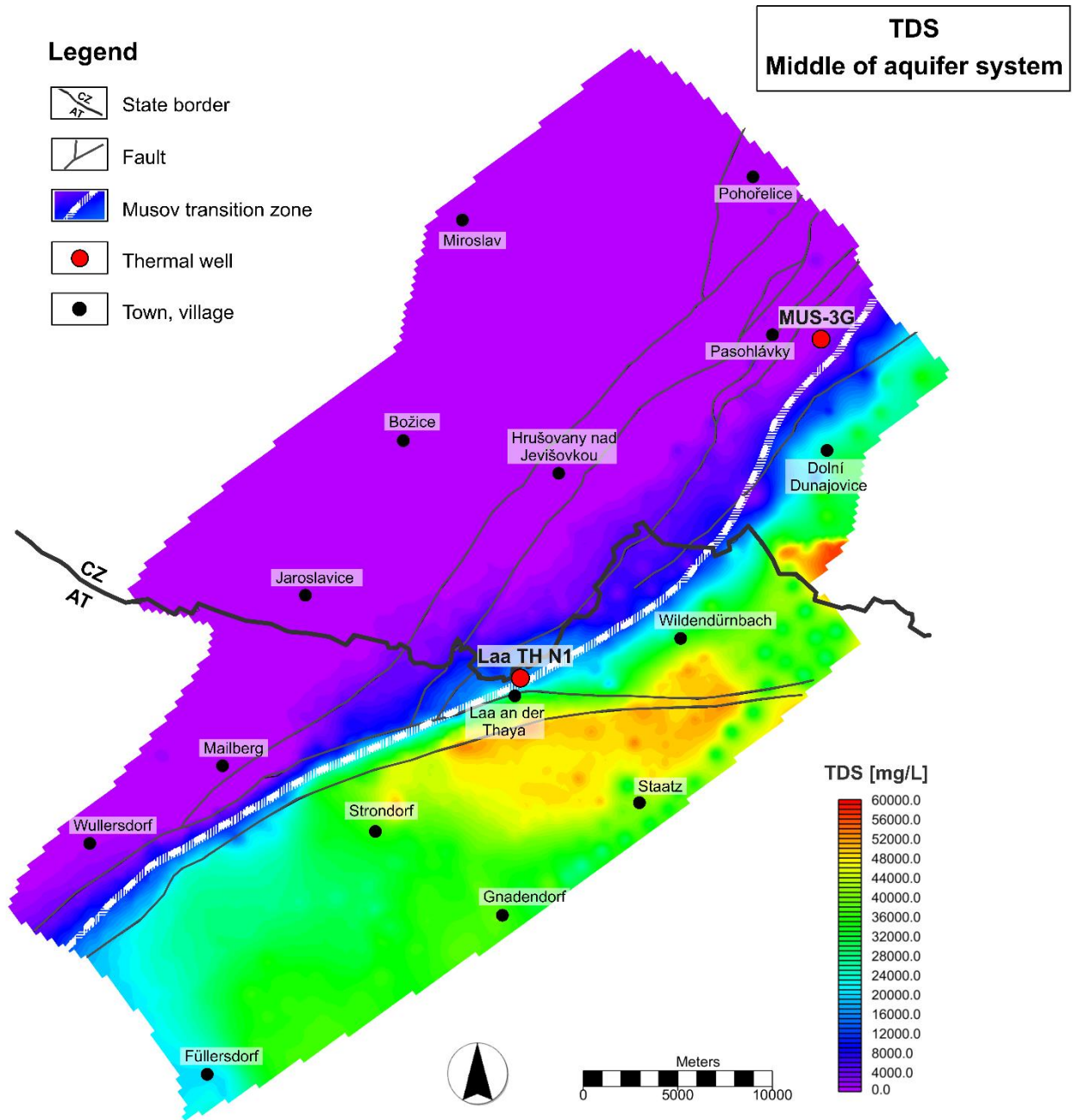


Figure 12: Map of spatial distribution of total mineralisation of waters in the middle of modelled aquifer system.

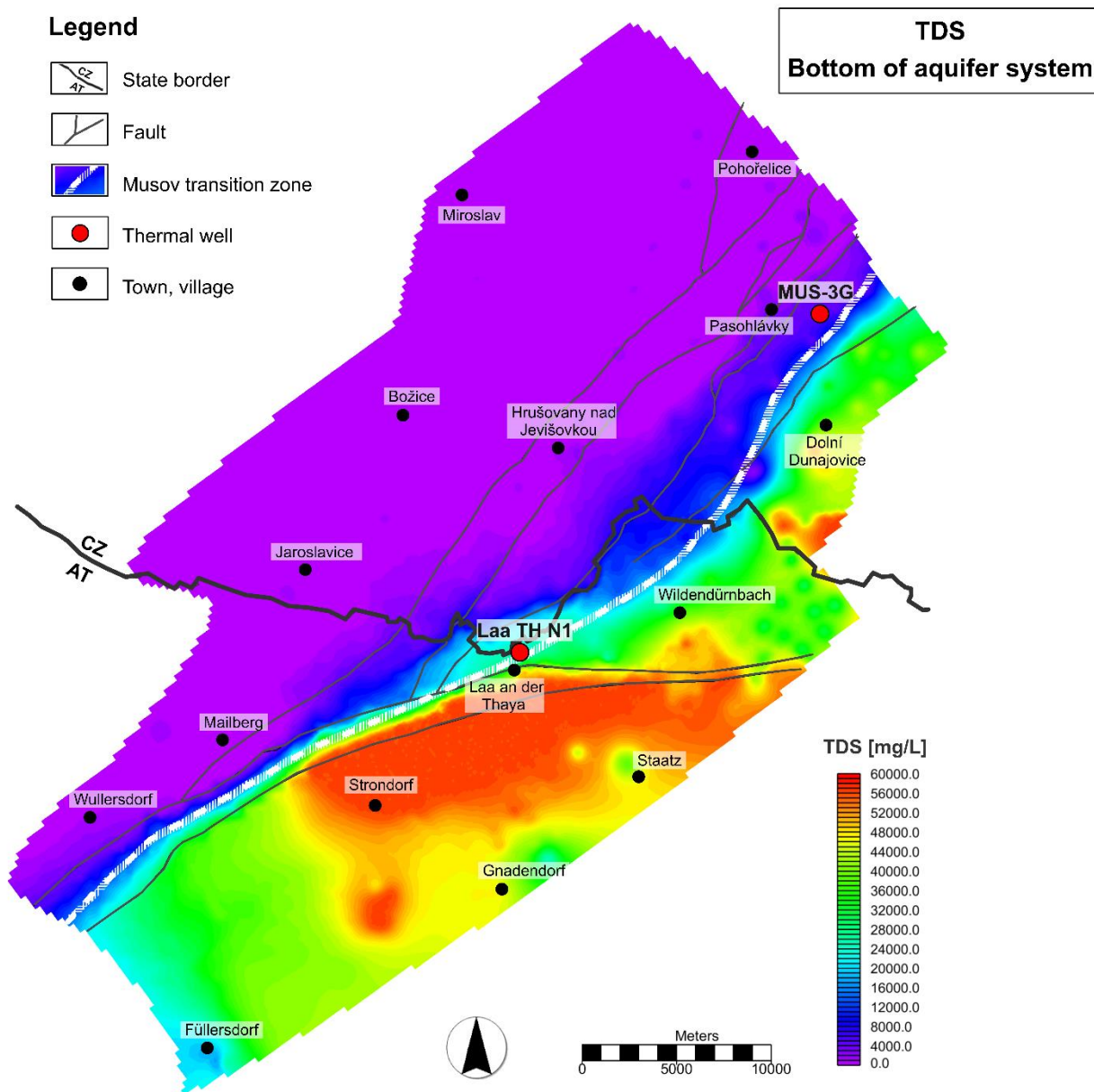


Figure 13: Map of spatial distribution of total mineralisation of waters on the bottom of modelled aquifer system.