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Curriculum Vitae – Long version

From October 1995 to January 2001, Dr. Hermann Klug graduated as a Diplom Geographer at the Department of Geography and Landscape Ecology at the University of Hannover, Germany. His German diploma thesis covered the development of ecology based landscape visions (Leitbilder) for landscape planning.

Since 2001, Dr. Hermann Klug is working as a researcher at the Department of Geoinformatics (Z_GIS) at the Faculty of Digital and analytical Sciences (DAS) at the Paris-Lodron University Salzburg (PLUS), Austria. First employed for the SPIN project (Spatial Indicators for Nature Conservation in Europe) funded by the 5th EC framework programme, he was involved in the Interreg IIIa project "SeenLandWirtschaft" dealing with catchment analysis and diffuse phosphorus emissions to surface waters. This transdisciplinary field of research at the interface of climatology, pedology, and hydrology, includes the involvement of stakeholders and politicians. It continued with the FP6 project BrahmaTWinn.

His major research expertise focuses on the development of holistic landscape planning approaches using GIS and remote sensing for integrated water resources and landscape management. His main field of research is in Geography and Landscape Ecology, with a special emphasis on soil sciences, spatial planning with Geo-Spatial Information Processing and Remote Sensing application. Working at the interface of meteorology, hydrology, pedology and land use / land cover sciences includes research on risk assessment and decision support. In August 2006, he has graduated as a PhD (Annex) with an integrated transdisciplinary landscape planning approach including the utilisation, management, adaptation and regulation of landscapes, its structure and ecological functions at different spatial and temporal scales and analysis of impacts of driving forces and pressures. His numerous research activities, developments and cooperation with international partners, have resulted in applied methodologies and advanced techniques helping to disclose conditions at risk and to develop strategies to reduce these risks at a landscape scale.

Dr. Klug's special interests cover the further integration of GIS, remote sensing and environmental modelling. The focus is on risk assessments, including climate change, which is assumed the main driving force and human security problem of the 21st century. He intends to strengthen further his present experience in the holistic and integrated view of system components from the Earth's surface and the connected climate-hydrology-soil boundary layer. He is interested in using transdisciplinary approaches to provide adequate and applied GI tools for decision support for stakeholders and politicians. This includes amalgamating web-based participatory approaches and visualisation techniques with process-based scientific analyses for repetitive and transparent scenario modelling, incorporating real time spatial-temporal datasets. Specifically, he looks at non-point source nutrient emission during extreme events (high precipitation rates and snow melting times). Real-time information from sensors (e.g. rain gauges, snow water equivalent, discharge and phosphorus measurements) operating at field scale enables him to proceed from static to dynamic modelling at local scale using real-

time operating and OGC/ISO standard compliant Sensor Web Systems. The SMART Hydro in situ measurements help understanding spatial processes in the dimension of time, while these will aid modelling approaches to be more accurate in future. Up- and downscaling opportunities in GIS frameworks link multi-spatial and multi-temporal scenarios to support decision making at different political levels. Linking environmental modelling from different disciplines with online visualization tools enable an applied access to science at the interface of purely scientific (value-free) and anthropogenic (norm- and standard-based) working environments. Enabling stakeholders to analyse the present environmental status based on state-of-the-art Spatial Data Infrastructures enhances communication and decision making across disciplines such as landscape planning.

In 2015, Dr. Klug received his *venia docendi* in Geography and Geoinformatics (Habilitation) and he is leading the Landscape Lab research team as Associate Professor. He was working in different international projects covering his research topics. One of the last projects were the C3 Alps project dealing with "Climate Change Capitalisation in the Alpine Space". Another one was the characterisation of New Zealand's groundwater aquifers (SMART) where the research focus was on setting up a Spatial Data Infrastructures (with experiences from the former eContentplus projects NatureSDIplus and GS Soil), a Sensor Observation Service and a three-dimensional WebGIS. In ThermoMap, he used his broad pedological knowledge and experiences to develop a pan-European and case study map on the use of very shallow geothermal energy resources for cooling and heating of houses. Within the EU Horizon 2020 project ESMERALDA, Dr. Klug is responsible for collecting and processing ecosystem services mapping and assessments in Austria. This continued in the SELINA project from 07/2022 - 06/2027.

Presently, Dr. Klug is synthesising his broad experiences in Geoinformatics and Environmental Protection with sports in the domain of mountain biking. In a Third Mission Project he is setting up a Mountainbike Competence Center as an educational platform. In SMART Biking he is driving environmentally friendly construction and use of bikeparks and drives spatio-temporal developments to improve cross country riders in competitions.

Besides his research activities, Dr. Klug organised sixteen international summer/winter schools as a principal investigator in the framework of Erasmus Lifelong Learning and was managing many post-graduate seminars at Z_GIS. Presently, he is lecturing in English and German language at the Department of Environment & Biodiversity at the University of Salzburg, the Carinthia University of Applied Science, the University of Applied Sciences Salzburg, and the West University of Timisoara in Romania. Besides that, he is active in international ERASMUS activities (KA107), where he was teaching at Victoria University of Wellington (New Zealand). As the ERASMUS+ (KA103) and CEEPUS (Central European Exchange Programme) coordinator at the Department of Geoinformatics (Z_GIS), he is also involved in lectures at the University of Pècs (Hungary).

Salzburg, December 2023