POSTER SESSION

Summary of posters

J. Andersson *et al.* (Streamflow AB, Posiva, REC, VTT and Pöyry Environment) presented the discipline-integrated approach to modelling that is being used for describing the Olkiluoto site in Finland. The Olkiluoto Modelling Task Force (OMTF) has been established for planning and integrating the results and the modelling work in the different supporting disciplines. The main duty of the OMTF is to develop site descriptive models of the Olkiluoto site, as well as predicting and evaluating the disturbance created by construction of the ONKALO ramp and the characterisation tunnels. The resulting geosynthesis is reported in a series of Site Reports. Future updates of the Site Report will form part of the Safety Case portfolio, supporting a licence application for constructing a repository for Finland's spent nuclear fuel at the site.

R. Hayata *et al.* (CRIEPI and Hanshin Consultants) presented a study on the characterisation of Quaternary tectonic uplift using fluvial terraces in inland areas of Japan. Estimates based on these fluvial terraces have been compared with those based on the displacement on active faults to demonstrate that an analysis of fluvial terraces provides an adequate method of determining uplift.

J. Goto *et al.* (NUMO and TEPSCO) presented an examination on the recent data from a seismic observation network in Japan to reconfirm the general understanding that the ground motion in deep underground openings is smaller than at the surface. Through a detailed analysis of the exceptional cases,, they identified three important parameters for evaluating earthquake ground motion in such openings: the depth and velocity distribution of the rock formations of interest, the intensity of the short period component of the earthquakes and the incident angle of seismic waves to the rock formations.

H. Shiratsuchi (TEPSCO and CRIEPI) presented information on the frequency of fault occurrence at shallow depths during the Plio-Pleistocene in Japan and an estimation of the incidence of new fault development. The probability of such development has been estimated from the frequency of faults which exist in Pliocene and Pleistocene strata distributed beneath three large plains in Japan, where a large number of seismic profiles and borehole data have been obtained.

N. Marcos *et al.* (Saanio and Riekkola, Pöyry Environment, Safram and Posiva) presented the role of the geosphere in the safety case for Olkiluoto. In Posiva's safety concept, the key functions of the geosphere are to provide favourable and predictable conditions for the engineered barrier system, to isolate this system against processes taking place close to and at the surface and to lower the probability of inadvertent human intrusion. A discussion was presented of the evolution of these favourable properties (an important issue in compiling the safety case) due to the disturbance from the construction of the ONKALO underground research facility, and later the repository, and also over at least the next several hundreds of thousands of years, driven by the effects of climate change.

H. Kondo (CRIEPI) presented a study, based on Japanese data, for characterising the long-term spatio-temporal variation in volcanism and the continuity of related phenomena in estimating regions

where the development of new volcanoes is more likely. He shows how regions of future volcanism can be estimated by extrapolations based on plausible geological models, which are based on the trends and distributions deduced from past volcanic activities.

H. Saegusa *et al.* (JAEA) presented a numerical analysis of the influence of topographic and climatic perturbations on groundwater flow conditions, such as hydraulic gradient, velocity distribution and flow paths and lengths, using simulations of landform development and groundwater flow, carried out in the Tono area, Japan. This study confirmed that the method of combining simulations of landform development with groundwater flow is useful in such assessments.

T. Niizato *et al.* (JAEA) presented a study of the impacts of natural events and processes on groundwater flow conditions from a case study in the Horonobe area in northern Japan. A conceptual model of future natural events and processes, which have potential impacts on the groundwater flow conditions, has been developed, based on the neotectonics, palaeogeography, palaeoclimate, the historical development of landforms and the present state of groundwater flow conditions.

T. Sasaki *et al.* (JNFL, Shimizu and Dia Consultants) presented a method for predicting changes in groundwater flow driven by long-term topographic changes due to uplift and erosion. The long-term (up to tens of thousands of years) prediction of groundwater flow, and the changes to this flow due to topographic and climatic changes, are based on realistic examples from the Rokkasho area, Japan, and the effectiveness of the method of prediction is examined.

K. Umeda (JAEA) presented an integrated approach for detecting latent magmatic activity beneath non-volcanic regions, using an example from the Iide Mountains of northeastern Japan. Although no evidence of volcanism during the Pliocene and the Quaternary is known in this area, the region has long been recognised to be unusual compared with other non-volcanic regions, as indicated by the presence of high temperature hot springs. An integrated approach, using seismic tomography and wide-band magnetotelluric soundings, together with determination of the content of helium isotopes in gas samples from hot springs, has been used to examine the reason for these anomalies.

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Response and Resilience of Crystalline Rock to Natural Perturbations and Geosphere Evolution (buffering)

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