

Multi-scale evaluations of submarine groundwater discharge

MAKOTO TANIGUCHI¹, MASAHIKO ONO² & MASAHIRO TAKAHASHI³

*1 Research Institute for Humanity and Nature, 457-4 Kamigamo, Kita-ku, Kyoto 603-8047, Japan
makoto@chikyu.ac.jp*

2 Agency of Industrial Science and Technology, 1-1-1 Azuma, Tsukuba, Ibaraki 305-8567, Japan

3 Nippon Koei Co., Ltd, 2304 Inanihara, Tsukuba, Ibaraki 300-1259, Japan

Abstract Multi-scale evaluations of submarine groundwater discharge (SGD) have been made in Saijo, Ehime Prefecture, Shikoku Island, Japan, by using seepage meters for point scale, ²²²Rn tracer for point and coastal scales, and a numerical groundwater model (SEAWAT) for coastal and basin scales. Daily basis temporal changes in SGD are evaluated by continuous seepage meter and ²²²Rn mooring measurements, and depend on sea level changes. Spatial evaluations of SGD were also made by ²²²Rn along the coast in July 2010 and November 2011. The area with larger ²²²Rn concentration during both seasons agreed well with the area with larger SGD calculated by 3D groundwater numerical simulations.

Key words submarine groundwater discharge; coastal zone; radon; numerical groundwater model; seepage meter