Holocene Diatom and Chrysophyceae assemblages at Toushe Peatland, Central Taiwan; Ancient flooding traces preserved in a peat bog during these 9000 years presumed by microfossils

*Kaoru Kashima[1], LiangChi Wang[2], Yu Fukumoto[3], Abdur Rahman[2]

1. Estuary Research Center, Shimane University, Department of Earth and Environmental Sciences, National Chung Cheng University Taiwan, 2. Department of Earth and Environmental Sciences, National Chung Cheng University Taiwan, 3. Estuary Research Center, Shimane University

Toushe Peatland is located at a mountain basin, south of Sun Moon Lake, central Taiwan. The thickness of the peat layer exceeded more than 40m, and the peat continuously deposited for more than 120,000 years (older than the Last Inter-Glacial).
In this paper, we analyzed diatom and Chrysophyceae assemblages at 133 samples of the top 5m sediment of the peat with 2-5 cm intervals, dated until ca 9,000 cal. years BP. The sediment was consisted of homogeneous peat bog, but thin silt –fine sand layers were observed at 56-68cm, 155-160cm, 205-240cm and 470-476cm depth.
Toushe Peatland is a high peatland, and specific diatom flora (*Eunotia serra, E. lunaris* etc.) which prefer acidic water environment are prospered. At the top deposited (0-20 cm depth), *Eunotia serra, E. lunaris* were dominated. However, they could hardly be kept in peat sediments. Therefore, diatom fossil was barren in almost part of the peat bog layers.
Diatom assemblages were abundant at thin silt –fine sand layers at 56-68cm, 155-160cm, 205-240cm and 470-476cm depth. The dominated species were *Aulacoseira* spp., *Cymbella* spp., *Pinnularia* spp., and *Staurosira* spp., which were abundant at normal freshwater ponds, rivers, not in an acidic high peatland. They were derived into a peatland from surroundings by outwashes of heavy rain. Sleeping cists of Chrysophyceae (called Golden Algae) increased at the silt –fine sand layers. They also were derived into a peatland by outwashes.
Thin silt –fine sand layers were deposited by outwash flooding from surrounding ponds and rivers into a peat bog by heavy rainfalls, presumed diatom and Chrysophyceae assemblages. We found four flooding layers, Flooding I –IV, dated ca.7500 cal yBC (ca.9500 BP), ca. 2500 cal. BC (ca.4500 BP), ca. 1800 cal. BC (ca.3800 BP) and ca.600 cal. AD (ca.1400 BP), respectively. Recent acidic pond was performed after ca.1300 cal. AD (ca.700 BP).
Ancient flood traces in Toushe peat bog could be compared the flooding traces at Korean Peninsula and Kyushu –Okinawa Islands. They might be related with the global climatic events in East Asia.

Keywords: Quaternary, Holocene, Ancient Flooding, High Marsh, Diatom

