Records of SST and MLD in the subtropical western North Pacific during last 180kyr

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Magnesium/calcium data from planktonic foraminifera (*G. ruber*) in subtropical western North Pacific sediment cores demonstrate that glacial-interglacial temperature differences as great as 7°C are observed over the last 180 thousand years. Overall, the SST leads over $\delta^{18}O$ during the last 180kyr. Cooling is moderate during MIS6. During MIS6, the coldest summer SST occurred about 15-20kyr prior to maximum glaciation. SST minimum is not seen during the LGM but is found during MIS3. SST warming seems to have started in the MIS2 or the late MIS3. Zig-zag SST trend during MIS2 is also noteworthy. Although early warming during MIS6 has been pointed out by some researchers [e.g. Lea et al., 2000], there is few report on SST warming before 25kyr B.P. Our Mg/Ca data suggest that SST during the latter part of MIS6 and during LGM were no longer cold in the subtropical western North Pacific.

Next, to examine the influence of the East Asian Winter Monsoon on subtropical western North Pacific, we employ mixed layer depth (MLD) proxy for winter sea surface water conditions [Itou and Noriki, 2002]. Shoaling of MLD occurred in the latter period of MIS 2 and 6 are found. This result suggests that surface water column was warmed and stratified due to weakened East Asian Winter Monsoon during the last two glacial ages.

When above evidences, deduced from SST and MLD, are considered together, the early warming during the MIS 2 and 6 are very plausible. This is the first study that shows early warming signal during glacial periods in the subtropical western North Pacific. Our results suggest that further attention must be paid to the impact of land-ocean system in the East Asia-western North Pacific on the glacial-interglacial cycle.

References

Lea D.W., Pak D.K. and Spero H.J., (2000) *Science*, 289, 1719-1724

Itou M. and Noriki S., (2002) *Geophys. Res. Lett.*, 29, 10. 1029/2002GL014693

Isotopy – regulator of metabolism

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Isotopy in biology is traditionally considered as a satellite factor of chemical interaction of components, participating in biochemical process.

Molecules - reagents isotope forms distribution effect, accompanying chemical interaction, determines their proportion, on value of which the completeness of a course of reactions, their reversibility, closure and other are evaluated.

However, the researches of isotopy impact on the biochemical processes course itself remains unexplored. Exactly to this part of problem the researches were devoted to, which have opened existence of the certain correlation between the isotope component and the composite result as parts of biochemical process. The case in point is not only the interaction processes velocity modification, but their directedness. In particular, the complementary nature – i.e. mutual correspondence in the chemical structure of two macromolecules, ensuring their interaction, - must have not only stereochemical correspondence, but also space and time relationship. The latter can be determined by reacting system isotopy, more exactly, by participation in it of **conformational isotopy effect,** which exhibits itself in macromolecule interaction including magnetic and other isotope effects.

All this allows to speak about existence of isotopy regulator function.