

## 5. Conclusions

The reconstructions of the paleogeography of the Mineoka-Setogawa area and the uplift history of the Himalayas mainly based upon the modal composition of sandstone and chemistries of detrital heavy minerals are summarized as follows.

### Mineoka-Setogawa area

The detritus of the Eocene to Oligocene Mikura Group was derived from the "Recycled Orogen" or "Dissected Arc" provenance including serpentinites of the Kurosegawa Belt and metamorphic rocks and granites in the Ryoke Belt.

In the earliest Early Miocene, the Circum-Izu Massif serpentinites were emplaced in the Mineoka-Setogawa area. The origin of the Circum-Izu Massif serpentinites was backarc basin peridotite, and the existence of an arc to the east of the Mineoka-Setogawa area was inferred. The initially emplaced Circum-Izu Massif serpentinites had similar characteristics to the Hayama type serpentinites, and the serpentinites which had been mainly exposed in the Early to Middle Miocene had similar characteristics to the Mineoka type serpentinites.

In the Early Miocene, there were four sedimentary basins which have different provenances in the Mineoka-Setogawa area; the sedimentary basins of (1) the Mineoka and Setogawa Groups, (2) the Fukawa and Kanigawa Formations of the Hota Group, (3) the Hota Group except for the Fukawa and Kanigawa Formation, and (4) the Kurami Group. The detritus of the Mineoka, Setogawa and Kurami Groups had similar provenance to that of the Mikura Group except for the origin of detrital chromian spinels. There is a possibility that detritus of the Fukawa Formation had been supplied from the continental basement directly. The detritus of the Hota Group except for the Fukawa and Kanigawa Formations was derived through a trench from the volcanic arc which was on the Honshu arc or Mineoka Plate.

The detritus of the Sakuma Group was mainly derived from the Mineoka and Hota Groups, and this means that the present arrangement of the Mineoka and Hota Groups was formed in the early Middle Miocene when the Sakuma Group had been deposited.

The provenance of the early Middle Miocene Koma Group had changed from the Izu arc to the Honshu arc when the Kushigatayama Subgroup had been deposited. This change supports the idea that the initial collision of the Honshu and Izu arc occurred in the Early Miocene.

## Himalaya-Bengal system

The modal compositions of sandstone in the Bengal basin changed between the Oligocene and the Early Miocene, and that the tectonic setting of the provenance of the sandstone changed from the "Craton Interior" and "Quartzose Recycled" to "Transitional Continent" and "Mixed".

From the Late Eocene to the present, detrital chromian spinels have been supplied from the Yarlung-Zangbo ophiolite to the Bengal basin. There is also a possibility that the Naga Hills ophiolite had supplied detritus to the Chittagong area in the late Pliocene to Pleistocene.

The chemistries of detrital garnets of the Bengal basin have changed two times since the Late Eocene. The detrital garnets from the late Eocene to the Oligocene were derived from the metamorphic rocks in the Higher and Tethys Himalayas. In the Early Miocene, the Tertiary granitic rocks in the Himalayas started to supply detrital garnets to the Bengal basin. From the Middle Miocene to the present, the Lesser Himalaya has also supplied detrital garnets to the Bengal basin.