

## Earth system literacy for citizens

IKEBE, Yasushi<sup>1\*</sup>

<sup>1</sup>National Museum of Emerging Science and Innovation

In order to solve environmental problems, such as climate change and decline of biodiversity, understanding mechanisms of the Earth system is critical. Not only specialists study those mechanisms but also policy makers and general public should know some basics and fundamentals of the Earth system that allow them to choose policies properly. But, what level do they need to understand the relevant science? We, Miraikan, aiming to realize a sustainable future society with 10 billion people, are conducting science communication activities that include a research for Earth system literacy for citizens and a dissemination of the literacy via permanent exhibits.

One of the most important issues from science communication point of view is the carbon cycle in ecosystem. It is rather well known that creatures are mutually connected with each other in the complex food web. However, more importantly, the carbon cycle needs to be understood at the atomic level for understanding the Earth environmental issues, such as the global warming. What causes the environmental problems we are facing can be defined in the following three major “bad behavior“ by humans. Those are; 1. Disrupting connections among life forms, 2. Disturbing amounts of cycling materials, 3. Making only one direction flow. Various phenomena related to the Earth environmental problems and measures for solving the problems should be evaluated from the “bad behavior“ point of view.

Another important science communication activity is to grasp the actual scales of human activities concerned with the three “bad behavior“. Human activities can be found everywhere on Earth and directly observed from remote sensing satellites. At Miraikan, we exhibit data that visualize those human activities.

Keywords: Earth System, Carbon Cycle, Remote Sensing