



P R E F A C E

Shoken MIYAMA
Director General of NAOJ

We are pleased to present the Annual Report of the National Astronomical Observatory of Japan (NAOJ) for fiscal 2010.

On March 11, 2011, Japan was hit by the biggest earthquake ever recorded. The earthquake and subsequent tsunami destroyed a number of houses and buildings and claimed large number of lives (the number of people deceased and missing has exceeded 20,000.) It is hard to imagine the heartache and difficulty that the bereaved families are going through. I would like to express my deepest sympathies to the victims and their families.

Some of the NAOJ facilities were also damaged by the earthquake including VERA antenna of the Mizusawa VLBI Observatory in Oshu, two VLBI antennas in Takahagi and Hitachi, and 45-m antenna in Nobeyama. Damaged antennas will be restored with allocated disaster restoration budget. Two NAOJ campuses in Mizusawa and Mitaka had no serious damages, but in some rooms, books and files on the shelf fell down on the floor. In addition to these direct damages, electricity to the Mizusawa campus was cut for several days and employees during the business trip were prevented from returning home due to paralyzed transportation network over a few days. In the Mitaka campus too, many employees were unable to get home on the day of the earthquake and they were forced to stay at their office or Cosmos-Kaikan (accommodation for researchers visiting

the Mitaka Campus.) Although the earthquake caused widespread damage in northeastern Japan, there were no casualties among NAOJ employees, their families or postgraduate students studying at NAOJ.

Tokyo Electric Power Company executed planned power outage in the Kanto Region including Tokyo for several weeks after the earthquake to make up for the shortage of its generating capacity due to the shutdown of the reactors at the Fukushima Daiichi nuclear plant. To respond to the nationwide efforts to save energy, we set up a task force to control power consumption at the NAOJ facilities and decided to use electricity at the Mitaka campus in the following order of priority: (1) Development of the ALMA receivers and HyperSuprimeCam for Subaru Telescope, which are under development in global partnership; (2) Operation of open-use instruments; (3) Advancement of researches; and (4) Maintaining appropriate work environment (e.g. using air conditioner). For further reduction, we requested degraded operation of super computers that consume vast amounts of electricity.

Having experienced a big earthquake, we became aware of various problems of our safety procedures such as evacuation from the building, safety confirmation of employees, and prompt setup of an emergency headquarters. As for myself, I was in central Tokyo on business at the time of the earthquake and could not get back to Mitaka for paralyzed traffic. We learned from

this experience that nothing is predictable in a chaotic situation just after the disaster. To be more prepared for emergency, we are developing new safety measures as follows: (1) Ensuring emergency communication contact and making plans for prompt setup of an emergency headquarters with various cases in mind; (2) Preparing emergency communication means such as satellite telephone system between Mitaka and other branches (we learned that ordinary communication tools become unavailable just after the earthquake.); (3) Building stockpiles of blankets and emergency food for persons unable to return home and preparing public-address system that can be used even during power outage; (4) Establishing a backup system of valuable data for risk diversification by making use of NAOJ facilities located in various places in Japan; and (5) as a future challenge, discussing the provision of in-house power generation system in case of a blackout.

After the nuclear accident at the Fukushima Daiichi nuclear plant, Japan was terrified by radioactive materials leaking from the plant. Although the NAOJ Mitaka campus is located far from the nuclear plant (over 200 km away) and the radiation level does not seem so high, some of the foreign researchers left Japan for fear of radioactive contamination. Moreover, many of the international conferences scheduled for 2011 were cancelled, and we had to make various arrangements for it.

In the affected Tohoku region (northeastern Japan), many postgraduate students were temporarily prevented from studying at their universities. NAOJ provided some rooms at the Mitaka campus to support them. We will continuously make every effort to provide assistance for the disaster victims.

The other sad news was the passing of three professors emeritus at NAOJ: Masaki Morimoto in November 2010; Shinzo Enome in March 2011; and Yasujiro Wako in April 2011. I was really shocked by the news of their sudden passing. They were all distinguished astronomers and I learned a lot from them. I would like to extend my profound gratitude to them and offer my deepest condolences to their families.

I would not go into the details of the activities of each project and division here, which will be described in detail under the section of Scientific Highlights, but I'd like to touch on the progress of ALMA that announced its first call for proposals for Early Science Operation at the

end of March 2011. Open-use observation with sixteen 12-m antennas is scheduled to start from October 2011. Although the performance of ALMA in the Early Science Operation phase falls far short of that in the full-scale operation phase with fifty-four 12-m antennas and twelve 7-m antennas, ALMA already boasts the world's highest performance at millimeter/submillimeter wavelengths. With the angular resolution 10 times better than Subaru or Hubble Space Telescope, ALMA is about to explore new astronomy. I hope ALMA will achieve unprecedented results and contribute to the growth of young researchers who will work all over the world.

Another event I should mention here is the 50th anniversary of the Okayama Astrophysical Observatory (OAO). We are very pleased that the observatory has achieved many scientific results over the past 50 years in cooperation among a lot of people, including those working in the observatory, former employees, and neighboring local municipal offices. It would be no exaggeration to say that the scientific achievements, technologies, and know-how of open-use operations obtained at the OAO led to the success of Subaru Telescope in Hawaii. The OAO is expected to play a central role in the inter-university project that will start from 2012, as well as in a joint development of the 3.8-m telescope with Kyoto University and Nagoya University. With the upcoming completion of the 3.8-m telescope, we are making a future plan for the OAO with a new form of installation in mind toward the realization of the Thirty Meter Telescope (TMT), which is a big challenge in the field of optical and infrared astronomy. We will continuously make our best effort toward high goals, while discussing the future role of the OAO.



Shoken MIYAMA
Director General of NAOJ