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SPECIAL ISSUE OF THE CRL JOURNAL ON "WESTERN PACIFIC VLBI NETWORK"

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1. Introduction

The Japanese Islands lie on four major tectonic plates, that is, the North American, the Eurasian, the Pacific, and the Philippine Sea plates. Taking advantage of this location, the Communications Research Laboratory (CRL; formerly the Radio Research Laboratory) has carried out many international Very Long Baseline Interferometry (VLBI) experiments since early 1980's. One of the best results was the precise initial detection of the Pacific plate movement which was accomplished in collaboration with various observatories in the USA.

Using this valuable experience, CRL initiated a new VLBI project named the "Western Pacific VLBI Network Project," in 1987. This project aimed to establish a domestic VLBI network with three stations located on different plates in order to investigate the regional crustal movement in the area of Japan. A 34 m parabolic antenna was constructed at Kashima (supposedly on the North American plate), and two 10 m-class antennas were constructed, one on Minamidaitojima Island (on the Philippine Sea plate) and the other on Minamitorishima Island (on the Pacific plate). The VLBI experiments in this project were conducted from 1989 to 1993 fiscal year with the participation of the Shanghai Observatory of the Chinese Academy of Science which served as the reference station on the Eurasian plate. This project produced many fruitful results concerning the relative motion of the plates around Japan.

In parallel with this project, CRL has carried out various other VLBI experiments and radio-astronomical observations. For instance, the "Metropolitan Diamond Cross Experiments" have been performed with the VLBI stations of the Geographical Survey Institute in Japan to investigate the crustal deformation in the Tokyo area. It is fearfully anticipated that great earthquakes will hit this huge city in the near future. Therefore, regular monitoring of the crustal deformation is considered to be of major importance in order to predict earthquakes. In connection with this, CRL has recently started the "Key Stone Project" which involves constructing four stations around the metropolitan area which will carry out regular VLBI and SLR observations.

This special issue will summarize the system development and experimental results of the Western Pacific VLBI Network Project and some related recent activities in CRL.