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Integrated Research and Capacity Building in Geophysics

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There have been special opportunities over the past several years to improve the ways that newly-constructed geophysical observatories in Southeast Asia and the Americas are linked with educational and civil institutions. Because these opportunities have been only partially fulfilled, there remains the possibility that new networks will not fully address desired goals or even lose operational capabilities. In contrast, the AfricaArray project continues to progress towards goals for linkages among education, research, mitigation and observatories. With support from the Office of International Science and Education at the US National Science Foundation, we convened a workshop to explore lessons learned from the AfricaArray experience and their relevance to network development opportunities in other regions. We found closer parallels than we expected between geophysical infrastructure in the predominantly low income countries of Africa with low risk of geophysical disasters and the mostly middle-income countries of Southeast Asia and the Americas with high risk of geophysical disasters. Except in larger countries of South America, workshop participants reported that there are very few geophysicists engaged in research and observatory operations, that geophysical education programs are nearly non-existent even at the undergraduate university level, and that many monitoring agencies continue to focus on limited missions even though closer relationships researchers could facilitate new services that would make important contributions to disaster mitigation and sustainable operations. Workshop participants began discussing plans for international research collaborations that, unlike many projects of even the recent past, would include long-term capacity building and disaster mitigation among their goals. Specific project objectives would include national or regional hazard mapping, development of indigenous education programs, training to address the needs of local monitoring

agencies, strategic international university partnerships, commitments to open data, and installation of permanent analysis systems that include open- source software. Such projects are intrinsically more complex than pure research – partly because they require funding from multiple sources to address diverse goals – but experience in Africa suggests that integrated programs contribute to long-term capacity building in ways that projects founded on basic research questions may not.

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