Kenyah Badeng ethnoclimatology and the transmission of weather information in East Malaysia

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Introduction

In the heart of Borneo, ENSO events have been affecting forest-dependent indigenous communities for thousands of years, but have been increasing in frequency and intensity since the 1970s (Tudhope et al. 2001). Historical records, though often general and anecdotal, describe the way these communities have responded to El Niño related consequences, such as droughts, crop failures, fires, floods, mast fruiting, animal explosions and disease epidemics (Knapen 2003). Recent studies based on first hand observations of particular communities, though rare, indicate a complex arrangement of short term coping responses and longer term adaptive strategies, all underpinned by an extensive base of local environmental knowledge (Brookfield 1993; Garay Barayazarra and Puri n.d.; King 1996; Puri 2007; Salafsky 1994).

Of growing interest in Borneo, and other locations, is the possibility of integrating local knowledge of weather and climate within State institutions for climate science, weather forecasting and disaster preparedness. The relevance and validity of local knowledge in these contexts has been demonstrated by a number of authors (Berman and Kofinas 2004; Nyong et al. 2007; Orlove et al. 2000; Riedlinger and Berkes 2001; Stigter et al. 2005), and NGO supported grassroots initiatives have emerged to share local knowledge and experiences to promote autochthonous adaptation to climate change, for the most part outside the gaze of the State (Gero et al. 2010). But in most places community responses to climatic variability and emerging change scenarios still take place in the context of State institutions, which provide funding for scientific research, climate modeling and a national forecasting service, emergency aid and disaster responses. Furthermore, State supported development policy today is often couched in the discourse of climate change risk reduction. Discussions on how to integrate local knowledge into these powerful institutions are thus pertinent and indeed urgent. We believe that in the case of Malaysia, the government could benefit from local weather and climate knowledge in at least four areas: (1) as local level expertise, (2) as a source of climate history and baseline data, (3) for insight into future climate change impacts and adaptation in remote areas, and (4) in long-term, community-based monitoring (McNeeley 2007). However, the integration of local knowledge within scientific or policy frameworks in Malaysia faces legitimization problems due to biases inherent in State discourses concerning education, development and technological modernity, and mass media policies. Since the 1970s, Malaysia has

been strengthening Western science and technology teaching to better capture potential benefits from globalization (UNDP-M 2010). However, its education policies have been accused of having an assimilationist agenda, promoting ethnic Malay interests (Brown 2007) at the expense of ethnic Indian, Chinese and non Malay indigenous groups. The 1996 Education Act, which abolishes the right to use, teach and develop the mother tongues of Malaysian ethnic communities at state schools, has been blamed for the rupture of communication between children and parents and grandparents (Rovillos 1999). Also, in some cases, this Act has been perceived by minority indigenous peoples as both an attempt to eliminate their knowledge systems and socio-cultural integrity, and ultimately to diminish acknowledgment of their resource management and human rights under national or international legal protocols (Ma Rhea 2002).

Thus, despite a global discourse advocating greater 'participation' and incorporation of 'local knowledge' in the policy domains of development, conservation and now adaptation to climate change, we argue that existing institutional conditions in Malaysia inevitably dis-incentivise the incorporation of local people and knowledge in the governmental planning process for disaster preparedness, response and mitigation.

We discuss these institutional and political constraints and develop our argument through several sections: (1) introductions to El Niño in Borneo and (2) Kenyah Badeng farming communities; (3) an analysis of the knowledge underpinning traditional forecasting techniques; (4) a summary of Kenyah Badeng perceptions of and responses to climatic variability, and (5) a set of propositions on the way this local knowledge operates in the socio-political-economic context of the Malaysian state.

References

Berman, M., and G. Kofinas. 2004. Hunting for models: Rational choice and grounded approaches to analyzing climate effects on subsistence hunting in an Artic community. *Ecological Economics* 49:31-46.

Brookfield, H., and Y. Byron. Editors. 1993. *South-East Asia´s environmental future: The search for sustainability*. Singapore & Tokyo: Oxford University Press and United Nations Universtity Press.

Brown, G. K. 2007. Making ethnic citizens: The politics and practice of education in Malaysia. *International Journal of Educational Development* 27:318-330.

Garay-Barayazarra, G., and R. K. Puri. n.d. Smelling the monsoon: Senses and traditional weather forecasting knowledge among the Kenyah Badeng farmers of Sarawak, East Malaysia. *Indian Journal of Traditional Knowledge*.

Gero, A., K. Méheux, and D. Dominey-Howes. 2010. *Disaster risk reduction and climate change adaptation in the Pacific: The challenge of integration*: University of New South Wales (UNSW) Australian Tsunami Research Centre & Natural Hazards Research Laboratory (ATRC-NHRL).

King, V. T. 1996. "Environmental change in Malaysian Borneo: Fire, drought and rain," in *Environmental change in Southeast Asia: People, politics and sustainable development*. Edited by M. Parnwell and R. Bryant, pp. 165-189. New York: Routledge.

Knapen, H. 2003. Innermost Borneo; Studies in Dayak cultures. *Bijdragen Tot De Taal- Land- En Volkenkunde* 159:635-638.

Ma Rhea, Z., and L. I. Rigney. 2002. "Researching with respect: Supervising aboriginal or Torres Strait Islander students," in *Assisting research students from non-traditional backgrounds*. Edited by J. Sillitoe, pp. 8-19. Vitoria, Australia: HERDSA.

McNeeley, S. 2007. "Climate change and variability in interior Alaska: An interdisciplinary approach to data integration for understanding regional patterns relevant to stakeholders," in *Amsterdam Conference on the Human Dimensions of Global Environmental Change--Earth System Governance: Theories and Methods for Sustainability*. Amsterdam.

Nyong, A., F. Adesina, and B. Osman Elasha. 2007. The value of indigenous knowledge in climate change mitigation and adaptation strategies in the African Sahel. *Mitigation and Adaptation Strategies for Global Change* 12:787-97.

Orlove, B., J. Chiang, and M. Cane. 2000. Forecasting Andean rainfall and crop yield from the influence of El Niño on Pleiades visibility. *Nature*:68-71.

Puri, R. K. 2007. "Responses to medium-term stability in climate. El Niño, droughts and coping mechanisms of foragers and farmers in Borneo," in *Modern Crises and Traditional Strategies. Local Ecological Knowledge in Island Southeast Asia*, vol. 6. Edited by R. Ellen, pp. 46-83. New York & Oxford: Berghahn Books.

Riedlinger, D., and F. Berkes. 2001. Contributions of traditional knowledge to understanding climate change in the Canadian Arctic. *Polar Record* 37:315-28.

Rovillos, R. 1999. Education in the international decade of Indigenous People. *Echoes* 16.

Salafsky, N. 1994. Drought in the Rain Forest: Effects of the 1991 El Niño-Southern Oscillation Event on a rural economy in West Kalimantan, Indonesia. *Climatic Change*:373-396.

Stigter, C., Z. Dawei, L. Onyewotu, and M. Xurong. 2005. Using traditional methods and indigenous technologies for coping with climate variability. *Climatic Change* 70:255-71.

Tudhope, A., C. Chilcott, M. McCulloch, E. Cook, J. Chappell, R. Ellam, D. Lea, J. Lough, and G. Shimmield. 2001. Variability in the El Niño-Southern Oscillation through a glacial-interglacial cycle. *Science*:1511-1517.

UNDP. 2005. *Malaysia. Achieving the millennium development goals. Successes and challenges*. United Nations Country Team, Malaysia.