

African Initiative Notes

Raj Pandya

28 September 2006

A real challenge for the Africa Initiative is navigating our two sometimes contrasting, goals: to benefit African people in concrete and demonstrable ways, and to build research capacity in Africa.

I intentionally separated these goals, though we often assume that research capacity is sufficient to produce demonstrable societal benefit. This assumption may be true in the US where an infrastructure exists to transform research results into societal benefit. From my conversations with people who work in Africa, the same cannot be assumed in Africa. Instead, many I talked to stressed the need for end-to-end solutions that explicitly connect research results to operational products and to users of those operational products.

Nevertheless, these goals are related. In the context of Africa, research capacity depends on *first* delivering applications that are reliable, usable, and valuable. By demonstrating the value of operational results, we promote local support for the research capacity that can lead to new innovations. According to many of the people at NOAA who have been active in Africa for a while, the best way to strengthen the African meteorological services is to help them offer something of value.

An initial focus on research applications means leading with solutions adapted to infrastructural, educational, and social constraints; developing these solutions requires collaboration with African partners. Our efforts to date have been informed by conversations with partners in Africa. The very premise of Shirley Malcom's visit and AAAS's interest was a report from the African Network of Scientific and Technological Institutions (ANSTI) called "Revitalizing Science and Technology Training Institutions in Africa: The Way Forward," available at www.ansti.org. Further, and more importantly, the efforts of Ben, Arlene, and Roelof are all informed by active collaboration in Africa. Finally, there are additional African partners and networks that can inform our efforts (e.g. AMMA, ACMAD, etc).

The initial focus on applications also means emphasizing meteorology's relevance to food security, public safety, water resource management, and public health; highlighting connections between meteorology and societal impacts will require collaboration with non-meteorologically focused stakeholders (such as agricultural extension agents, governmental agencies, and nongovernmental agencies). We haven't had as much luck identifying and connecting to these non-meteorological stakeholders. Nor have we been able to develop the networks and relationships that can sustain our initial investment and ensure the dissemination of information to users.

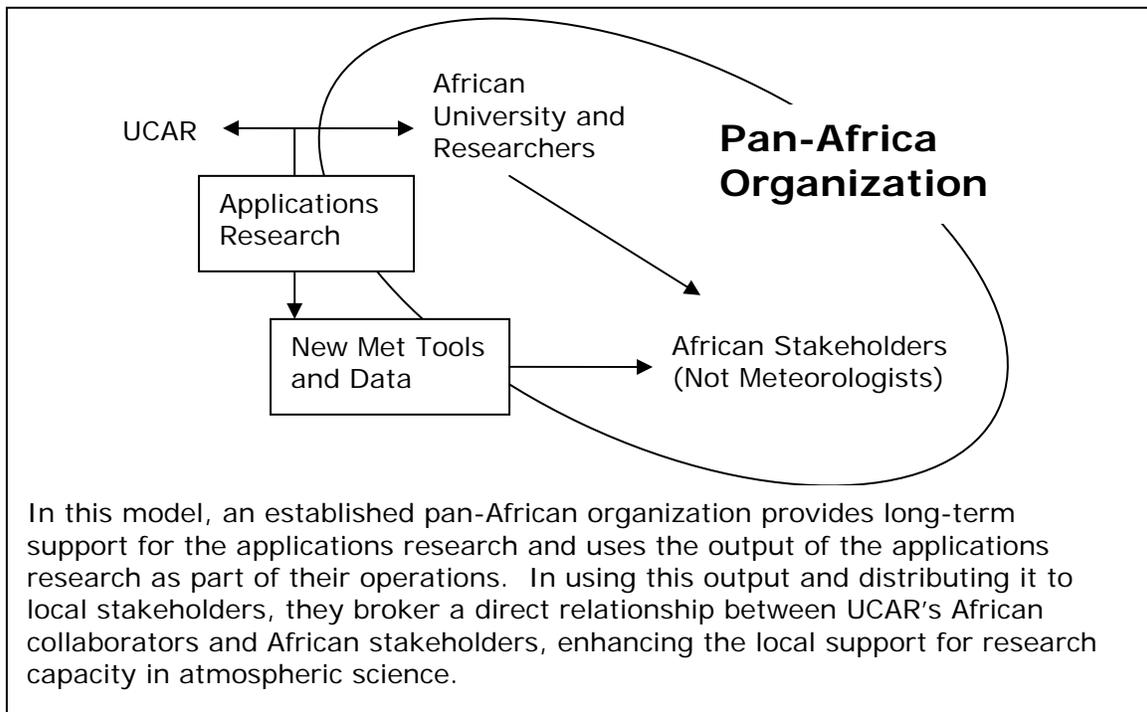
Finally, our niche in applications appears to be in the arena of short-term prediction. While much has been done already concerning seasonal prediction, many of the people I spoke with commented on the lack of good short-term forecasts; the WRF/Unidata/Radar project we've outlined will best fit this need.

A missing piece in the Africa Initiative is a large pan-African organization, like an NGO, multi-governmental agency, or even a company, with a history of work in

Africa and in-place collaborative working relations with African governments and African stakeholders. We should identify a pan-African organization that uses, or could use weather information in its decision process and would be willing to support the generation of that information in Africa, by African researchers and operationalists (our African partners).

Partnering with such an organization would have a number of benefits. First, this pan-African Organization would provide the infrastructure and legal framework for UCAR's activities through its existing relationships with African governments; this would provide our partners with the protection and support they need to navigate local and national policies and practices. Second, the pan-African organization would serve as the customer, both funding and using the meteorological tools and data. By using the tools and data in their efforts, the pan-African organization would ensure the demonstrable societal impact of our efforts. Finally, to the extent which this pan-African organization acts through an on-the-ground and local network, UCAR and our African partner would be connected to local stakeholders, without having to build a network of non-meteorologists.

From UCAR's point of view, one very important advantage of this arrangement is that it allows UCAR to focus on the work it knows well – collaborating with local researchers, training new researchers, and developing research infrastructure. This collaboration focuses initially on developing applications-oriented output, but the capacity created by doing this also supports ongoing research collaborations. The pan-African organization itself is able to improve its operations by using weather data and tools. Finally, our African partner has new capacity and a vehicle for sustaining it.



Notes from individual conversations:

Kabineh A Konneh

Program Coordinator for Africa
Sector Applications Research Program (SARP)
National Oceanic and Atmospheric Administration (NOAA)
Climate Program Office
<http://www.ogp.noaa.gov/mpe/csi/esd/africa/>

Kabineh described a successful program that focuses on developing regional rainy season forecasts and translating these into actionable information for decision-makers and planners. This is done primarily through Climate Outlook Forums, described below.

1. In each of the three regions in Africa (South, West, East) National Met. Service employees, university scientists, and foreign scientists meet to share data and develop a seasonal forecast. In the process of working together, there is significant knowledge and technology transfer.
2. A user's training forum, where decision-makers, planners, extension agents (e.g. agricultural extension agents who provide advice to farmers) learn how to use the data
3. A big, high-profile event that presents the seasonal outlook.

This approach has been used since 96, and the COF's, at about \$35K each, are currently supported by partnerships between donor international organizations (i.e. USAID) and African institutions. Kabineh's current focus is on moving toward sustainability by institutionalizing the COF process in regional or national agencies. Kabineh suggests one strategy for this is to extend the COF process to societal problems, like a Malaria outlook, drought outlook, food security outlook.

According to Kabineh, a key part of the success of these efforts is the involvement of users and extension agents in the process, so that these forecasts can translate into concrete benefits through appropriate decisions.

Although Kabineh's focus is on seasonal prediction, he mentioned potential value in the 10-day realm of forecasts, since these timescales are crucial to agricultural centers. In this context, he emphasized the role of extension agents, who/that would translate the forecast into information usable by local stakeholders.

Much of the support for COF comes from USAID. Participating agencies include:
World Meteorological Organization (WMO),
International Research Institute (IRI),
Drought Monitoring Centre, Harare
Intergovernmental Authority for Development (IGAD)
IGAD Climate Prediction and Applications Centre (ICPAC) <http://www.icpac.net/>
ACMAD, African Centre of Meteorological Application for Development

Kelly Sponberg

NOAA Climate Program Office
RANET coordinator
<http://www.ranetproject.net/>

Ranet is an Africa-started program that now works in Africa, Asia, and the Pacific. Focusing on developing countries, its mission is to improve remote and rural community access to weather, climate, and related environmental information.

Kelly offered several important lessons learned from his work in Africa and in support of African efforts over the last 10 years. He recommends a focus on “end-to-end product.” This means working with African Meteorological Agencies, on a regional or sub-regional basis, to develop a new product that doesn’t stress current operational capacities. Because operational capacities vary by country and even within countries, this means focusing on local scales. Once the product is developed and absorbed into operational capabilities, it can be disseminated. The production and dissemination of regular, reliable products is fundamentally important; a strategic focus of any sustainable effort in Africa is to strengthen operational centers by ensuring that they have something to offer.

Kelly also offered some lessons learned from past efforts where an end-to-end approach wasn’t taken. In one case, extensive training was largely ineffective due to a lack of incremental development. Staff received additional training, but there was no infrastructure or support for the staff to take advantage of the training. Another opportunity to learn may be provided by NOAA’s efforts to develop a “desktop ETA” that could run on a PC and be used within constrained environments. Finally, Kelly pointed out the need to recognize constraints in Africa. ACMAD, for example, operates on an internet connection that is intermittent and operates at only 3-12 KB/sec.

Potential Contacts

John Jones, NWS training; interested in strengthening NWS efforts in Africa

Rob Master, International Desk of NWS

Linda Moody, at NOAA, who is in charge of the GEOnetcast, a global network of satellite based projects to provide environmental data worldwide, and is actively looking for applications.

Mickey Glantz

NCAR

Mickey and I discussed the possibility of a high-visibility event to explore the connection of meteorology and climate to African needs. As we envisioned it, this would be an opportunity to explore political, economic, and demographic components of the connection, as well as the technological aspects.

We could frame the workshop as a follow up to one NCAR sponsored as part of its 25th Anniversary, entitled “Drought and Hunger in Africa.” 2007 would be the 20 year anniversary, and we could look at progress over the last 20 years. A simple structure for the workshop would examine three questions:

- a. Where have we been?
- b. Where are we now?
- c. Where are we going?

The workshop could raise hard questions about the past investments made in weather and climate technologies and their overall benefit to African societies. It could also look at charting a way forward, based on this.

Ben Lamptey

NCAR

Ben is interested in establishing a WRF research-and-operations capacity in Ghana. In some ways, this seemed to conflict with ideas presented above, focusing on usability, connection to society, and perhaps older technology.

What does WRF offer, in terms of concrete benefit to African people?

1. *In terms of Operations, WRF would offer improved forecasts of severe events, or rain events, for public safety and planning, including industries like construction and agriculture.*
2. In research, WRF would offer improved input to applications (e.g. agricultural, hydrological, economic) models, which are currently driven by either statistics or GCM output. In addition to better data, a research WRF would allow the possibility of scenario-based simulations and improved decision-making
3. From a long-term perspective, a locally run WRF would offer the opportunity to develop a model tuned to the local environment. Currently, weather forecasts in Africa depend on products produced elsewhere, which limits their customization for the local environment.
4. An operational version of WRF could support a modeling research program in Ghana, which may include use of WRF to downscale climate prediction.

Why Ghana?

1. Ben knows them, so it builds on an existing connection to UCAR/NCAR/UOP
2. There is a level of infrastructure and expertise to build on
 - a. Kofi Anan centre for Excellence
 - b. Meteorological Center for Analysis and Forecasting Building
3. The meteorological service and University Meteorology Department have an existing collaborative relationship (e.g. UG students intern at Met Office) and are located close to one another

Wassila Thiaw

African Desk Coordinator
Climate Prediction Centre NOAA/NWS

The Africa desk at CPC focuses on training African professional meteorologists and climate scientists, and helping develop capacities on weather and climate monitoring and predictions at African institutions, including the academic community. There are three primary focuses to the Africa Desk activities.

1. Operational products, distributed via the internet to African countries (primarily through ACMAD) and to USAID and IRI. The shortest time-scale of these products is 10 days. http://www.cpc.ncep.noaa.gov/products/african_desk/
2. Training programs: 2 visitors a year, for 4 months to study climate prediction and monitoring. A severe Wx program is being developed along similar lines.
3. Funding for research applications projects tailored to user needs.

Although there is some funding for these activities in NWS, most of the funding comes from grants; some from NOAA OGP and some from USAID.

Wassila stressed the importance of capacity building, and again emphasized that the best way to build capacity is to enhance the capabilities of the national and regional institutions. He suggested a comprehensive approach that would integrate research collaboration, training, infrastructure, and usable products. He stressed research applications, rather than purely academic research, and highlighted the need for more information about the timing and distribution of rains within a rainy season. He

emphasized the lack of short-term forecast models with parameterizations that properly reflect African conditions, and thought that would be a good place to begin.

He mentioned a WMO severe Wx demonstration project in 5 SE African countries. The focus of this demonstration project is to train professionals in severe Wx forecasting.