

**Summary Comments of the EOL External Advisory Committee (EAC):
From the First EAC Meeting: 10 January 2006**

The EOL External Advisory Committee held its inaugural meeting on January 10, 2006, at the EOL facilities at the NCAR Foothills Campus. The meeting consisted of a series of briefings by EOL directors and facility managers, followed at the end of the day by discussions with the EOL Director and Deputy Director. The EAC was very impressed with the clarity and focus of the EOL presentations and the significant progress made to date in organizing and focusing the new laboratory under its new management. The EAC believes that the direction being taken by the EOL leadership is well focused, on-track and moving forward in a positive and organized manner. This is especially impressive given that the new leadership team – EOL directors and facility managers – has been in place but a few months. There is a common vision and a new esprit de corps in EOL that radiates from the managers and staff that we met. The EAC commends Roger, Karyn and the facility managers for tackling head-on the big challenges it faces, and for engaging EOL staff and the extramural EOL community in the process. The following are comments and questions that the EAC raises for EOL's consideration and continued discussion.

It is clear that for EOL, the new HIAPER aircraft is its highest priority facility, which is appropriate given the scope of the investment and broad spectrum of university investigators it will serve. With that priority also come several key questions and concerns. Is the budget adequate to properly support HIAPER operations and development and support of the HAIS instrument suite? How will EOL deal with simultaneous requests for deployment of HIAPER and the C-130 (and perhaps ELDORA); are there sufficient crew, scientist and support personnel? With HIAPER operational, can EOL continue to provide a balanced and effective suite of ground-based and airborne observing facilities and support?

A related issue pertains to the approach EOL has taken to develop priorities to date, and the approach that will be pursued in the future. This raises several questions. For example, will EOL need to pare down its facility suite to match the available resources so that they can be used most effectively? Or, will EOL (in concert with NSF and the university-user community) seek to identify the optimum suite of NCAR-supported observing facilities, and then develop a strategy for matching the EOL financial resources to those facilities? A related issue pertains to the need to be innovative and opportunistic, and to have the needed financial and personnel resources. Will EOL remain flexible so as to be able to respond to unforeseen opportunities, challenges and user needs?

The EAC inquired into the scope and strength of EOL's interactions with other groups -- both within and external to NCAR and UCAR. The following issues were raised:

- Does EOL have an adequate connection to the chemistry and climate communities?
- Is there a strong enough connection to those engaged in precipitation physics? (Jeff Stith and Al Cooper, among others, represent strength in this area).
- What is the role of EOL vis-à-vis the universities in the area of instrument development? Who does what and how will resources and expertise be shared?
- What should be EOL's role in the area of satellite remote sensing? How will EOL collaborate with the satellite community? [The EAC suggests limiting support to satellite programs that seek to validate satellite observations and those that seek to incorporate satellite data into largely terrestrial data sets from field campaigns].

The EAC has the sense that there is instrument development going on in a large number of places -- in almost every facility -- but then EOL also has a separate Technology Development Facility (TDF). Is there a "grand strategy" for technology development and how priorities will be set for the Laboratory? How will EOL approach instrument development? Should it be looking at interesting instruments that are promising for their own narrow, specialized (and important) purposes, or should it be looking to solve a grand measurement challenge? For example, boundary-layer characterization and water vapor measurement are two important measurement challenges for which there is not as yet a satisfactory measurement solution. There seems to be a diminishing emphasis in EOL on observations in the boundary layer, with increased emphasis on HIAPER and on certain remote sensing devices; does this reflect a de facto de-emphasis on boundary layer observations? [The EAC notes that, by contrast, the broad atmospheric science community has placed a heightened priority on the need for high-resolution boundary-layer observations]. While only touching the surface of this important issue, the EAC nonetheless leans toward a more integrated program of instrument development that seeks to address science-oriented needs and challenges in a focused way. For example, if 4D water vapor measurements in the troposphere were to become such a focus, then what instrument development --or combination of instruments and, say, observing strategies -- could EOL best attack to yield the largest scientific impact for the research community?

The EAC welcomes further discussion regarding the optimal balance within EOL among education, development, deployment, and research activities. For example, educational outreach may require a more strategic approach than seems apparent today; the EAC heard about outreach in each of the facility presentations but not a grand strategy for EOL.

The EAC encourages EOL to consider the role and value of emerging sensor networks and network analysis tools. How can (or should) EOL work with programs like CASA and emerging surface-based 2D and 3D mesoscale networks?

The EAC suggests that EOL could be more proactive in facilitating instrument developments outside of EOL and NCAR, either by establishing training programs or by holding community workshops and the like. This is true throughout EOL but is especially important for HIAPER. Except for a few laboratories, the community does not know how to go about building FAA-certified and automated instruments. There is a large knowledge and experience barrier separating PIs who have good measurement ideas from being able to build instruments for HIAPER and other EOL aircraft.

Is EOL actively pursuing technology transfer opportunities to ensure that its developments are widely available to the broader research and operational communities?

What is the strategy for ELDORA and the migration plan to ELDORA II? Given the abundance of challenges EOL faces, can it support development of a new ELDORA, and can it be properly supported given the demands of HIAPER and C-130 instrumentation?

Is EOL making the most effective use possible of instrumentation that has either been developed by the universities or is available commercially? Are there situations where EOL could (should?) purchase them or replicate them from what universities already have? One of EOL's strengths is the integration of a suite of disparate instruments – whether aboard a research aircraft or as part of an advanced surface-based network – and the development of software tools that together maximize their use in research. Not all of these instruments (nor software tools) need to be developed in house, and EOL must take advantage of external capabilities.

The EAC was favorably impressed that the EOL managers are on the same page with regard to an EOL vision and the strategy to make it a reality. Equally important is the support and enthusiasm of the rank and file. EOL management must continue to solicit staff input and nurture their “buy in.”

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