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Coordinators of NASA education and outreach (EPO) programs participate in a wide range of presentations and workshops for K-12 educators. Typical presentations include one-hour talks by NASA scientists and one to two hour hands-on activities conducted by EPO teams using NASA-produced education material. Teacher workshops can run from a half-day to several weeks depending on the program. As an EPO team for several NASA Earth Science missions, we have a variety of roles in the development and implementation of workshops for educators such as providing scientists as presenters, overseeing the development of education materials, creating the agenda, teaching in the workshops, and providing follow-up support for participants. Over time our workshop approach has evolved as we have learned to focus on specific outcomes and have improved our ability to meet the needs of our participants. We encourage participants to come as teacher teams from the same district or school. Most workshops combine scientist presentations, opportunities for hands-on exploration and teacher reflection. We now are working to create support networks for participants during the school year. This paper will highlight the lessons learned by the Landsat 7 and EOS Aura EPO teams as a result of our workshop experience and feedback from our workshop participants. We will offer some recommendations for developing workshops and suggest some next steps for assessing the effectiveness of teacher workshops.

ED62A MCC: 130 Saturday 1330h

Teaching the Teachers: What Have We (They) Learned? II *(joint with OS, GC, PA)*

Presiding: **J Thieman,** NASA Goddard Space Flight Center**; S Stockman,** Science Systems and Applications, Inc.**; F Ireton,** Science Systems and Applications, Inc.

ED62A-01 1330h INVITED

NSF Programs that Support Faculty Development: An Overview of Opportunities in the Geosciences

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The National Science Foundation, Division of Undergraduate Education administers a number of programs that support faculty development in the geosciences. The National Dissemination (ND) track in the CCLI (Course, Curriculum and Laboratory Improvement) Program supports projects that promote the development of opportunities for professional development for faculty through national offering of workshops, short courses, or related activities. These projects involve extensive outreach activities and large numbers of faculty from across the country. An overview the CCLI-ND program will be given and current ND projects in the geosciences will be highlighted. Some strategies for implementing effective faculty development activities will also be given.

URL: http://www.nsf.gov

ED62A-02 1345h

Workshop Formats and Teacher Transformation: the TLRBSE Experience

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The main objective of most workshops aimed at teachers is to transform how they teach science in the classroom to the hands-on, inquiry-based model advocated by national and state education standards. Many different workshop formats have been tried to achieve this objective, ranging from half-day training sessions on site at the teachers schools to multi-month total immersion experiences at research centers followed by in-depth support during the school year. Some of the issues involved in the choice of format include, teachers time, potential for replication, and effectiveness in actually changing teachers teaching habits that are often deeply ingrained. The authors have had personal experience with a wide variety of workshop formats. We find that teacher transformation requires gaining a fair amount of specific content knowledge, confidence in using software and data, and hands-on experience in using the inquiry approach. One-day workshops have very little effect. Longer workshops from a week to a whole summer - are better. Still better are longish workshops with the same teachers returning for several consecutive summers with individual teacher support during the school year. The additional workshops allow the teachers to share their experiences with the new materials and gain additional training in content and pedagogy. Problems with such programs include the high cost and relatively small number of teachers affected. Continued contact during the school year can also be a challenge. We are currently running a program called Teacher Leaders in Research Based Science Education (TLRBSE) which includes a distance learning course to provide content and pedagogy, a two-week summer workshop at a major observatory to provide hands-on experience and direct contact with scientists, and an online community for school year support. We will describe our experience to date with this new format and compare our results with other format we have tried in other programs. This work is supported by NSF ESI 0101982.

URL: http://www.noao.edu/outreach/tlrbse/

ED62A-03 1400h INVITED

Lessons Learned in Professional Development

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Successful professional development has many essential elements. It must deliver rich content in the context of supporting instruction. It is best done in an environment where teachers can reflect on the pedagogy and how it supports learning the content. Implementation of new knowledge or curriculum in the school classroom has greater success when teams of teachers participate in professional development and have a mechanism to support one another when they return to the classroom. Support of the school administrators or lack of it has a tremendous impact on a teachers ability to implement changes as an outcome of professional growth. Research shows that professional development has greater impact when there is a requirement for action by the participants after the training. However, our experience shows that when all of these structures are in place, the most critical element for professional development to ensure long term impact on teaching and learning in the classroom is the teacher support provided after the program.

We have conducted professional development lasting from half-days to four weeks. While each has their own place, the impact is strongly determined by the level of assistance provided to the teacher when making changes in the classroom. Support can range from electronic communications to personal assistance in the classroom. One of the essential components is rapid response so problems are addressed before they become obstacles to change. For the past three years, we have used graduate and undergraduate students to provide classroom assistance following professional development. We will report on the different types of programs supported and the impact on curriculum and teaching methods in the classrooms.

ED62A-04 1415h

Exploring Earth Science with Middle School Teachers: Collaboration between Scientists and Educators

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A series of earth science courses for middle school teachers has been designed to investigate physical geology, oceanography and meteorology, historical geology, and participant-selected topics. These courses have been offered during the academic semester in a weekly class format. They also can be "bundled" into two to three week-long intensive summer workshops.

The introductory, historical, and oceanography/meteorology courses are content-driven and designed to meet the teaching standards requirements of participants. Each class, facilitated by a geoscientist, concentrates on a specific topic, involving observation and analysis of data related to the topic, discussion, content presentation, and the incorporation of local resources (e.g., museum exhibits, natural settings, etc.) where ever possible. Each class closes with an extensive participant-driven discussion of where the topic fits within the educational standards/expectations (with emphasis on skills, content knowledge, and science as a human endeavor). Participants are provided with a variety of existing content-accurate classroom materials and resources appropriate to middle school students. The "topics" course is a participant-driven investigative class in which participants select two to three earth science subjects of interest to explore in detail. With the assistance of a goscientist-facilitator, groups research the topics and select classroom resources and activities. Classroom implementation, conducted by the participants, is similar to that of the content courses (above).

Collaborative and individual pre- and post-tests (as traditional "tests," essays, flow charts, diagrams, etc.) are increasingly being used to help the facilitator and participants assess starting points and development of understanding. Concept maps and journals are used to follow progress as well. Content and data, while presented at an adult-learner level, are discussed with the participants in light of subject material appropriate for the classroom, and paths to use the information in the classroom. The geoscientist serves in two roles, facilitator and scientist, with a primary goal of helping the participating teachers to develop a depth of understanding of the content. The teachers bring their strengths as educators to the collaboration; armed with accurate content knowledge, data, and understanding of the process of science, they help identify best teaching practices and transfer the information to students.

ED62A-05 1430h

SECTRA - A novel approach to teacher workshops for Sun-Earth science

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The Sun-Earth Connection Teacher Resource Agent (SECTRA) program was an attempt by the scientists and outreach specialists of ISTP and SECEF to both "teach the teachers" and then assist those participants in teaching their colleagues. In designing our program, we put special emphasis on partnering with education offices and groups, evaluating the needs of the teachers before, during, and after the workshop, and providing the best educational resources - even if it meant asking others to partner with us. We integrated hands-on activities for participants with sequential, themed science presentations, tours and field trips to science facilities, and discussions of pedagogy and educational issues. We also built time into the workshop for planning and material/lesson-plan evaluation. The culmination of SECTRA was a grant program by which participants applied for funding to conduct workshops in their own communities. We will discuss the rationale and logistics of this multi-year SECTRA program, as well as the evaluation of those workshops.

URL: http://www-istp.gsfc.nasa.gov/istp/outreach/workshop/

ED62A-06 1445h

A Novel Approach to Teaching and Learning Biogeoscience

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Use of Native ways of knowing or traditional knowledge that include observations, stories and apprenticeship, is still intact in many communities in more than 200 small villages in rural Alaska. However, this way of knowing is rarely present in public school settings. This lack can create educational and sometimes emotional conflict for the Native student. There is a need to integrate world views and ways of knowing in learning and doing science, and motivating students. An emerging model in biogeoscience education integrates western science and Native observations and knowledge in an NSF-funded global change education program (http://www.uaf.edu/olcg) that actively engages students in local climate change research and monitoring that is globally connected. The two-week teacher summer institute and program called "Observing Locally, Connecting Globally" for K-12 Alaska teachers and their students, uses knowledge and expertise of Native elders and other local experts, the Global Learning and Observations to Benefit the Environment (GLOBE) program protocols, other Alaska climate change research, best science education practices, and standards-based and culturally responsive science curriculum.

The professional development institute is jumpstarted by a field trip with Athabascan elders who share their long-term observations and whole-system thinking. The teacher participants start sharpening their observations skills as they listen to the Native experts and observe their environment. They also learn and practice GLOBE scientific measurements in the areas of atmosphere/climate, soils, hydrology, plant phenology, land cover/biology, data entry on the GLOBE web site and data analysis. The common ground is cultivated between Native knowledge and western science in organizing principles, habits of mind, skills, procedures and knowledge outlined in the Handbook for Culturally Responsive Science Curriculum by S. Stephens. Scientists, local experts including Athabascan and Inupiat elders, and master teachers teach both in the classroom and out in the field during the institute, laying the foundation for understanding earth systems and the inquiry process. Additionally, best classroom practices e.g. establishing a constructivist learning environment, teaching and assessing to standards, inquiry learning in science, learning cycle model, and teaching and assessing for diversity, are discussed and modeled during the institute. The participants demonstrate what they have learned through presentations, and also formulate their own research questions and conduct an abbreviated investigation on their study plots or on an environmental change issue relevant to the community in which they teach.

Back in their classrooms, the teachers implement what they have learned and guide their K-12 students in global change research that includes input from Native elders and other community experts about their observations on climate and environmental changes, and taking environmental measurements at or near their schools. Program support is provided to teachers during the year. The process of blending indigenous knowledge with science instruction and research investigations, aimed at enhancing student science interest and skills, biogeoscience knowledge and awareness of global change issues important to their community began two years ago when our program started. Parts of our training model have been used in two national GLOBE Training for Trainers, one for Tribal Colleges, and the other for Pacific Islander Educators.

ED62A-07 1520h

The Exploratorium Teacher Institute: Providing Content-Based Science Teacher Enhancement at a Science Museum

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The Exploratorium Teacher Institute has been a professional home for middle and high school science and math teachers for eighteen years. The Teacher Institute offers a rich mix of hands-on activities based on Exploratorium exhibits, content based discussions, classroom materials, web-based teaching resources, and machine shop experience. The program is designed primarily for educators' personal enrichment, but topics covered can be used immediately in a classroom setting.

In the summer of 2002 we presented a planetary geology workshop. I will illustrate what we have learned about working with science teachers over the last two decades by describing this workshop.

URL: http://www.exploratorium.edu/ti

ED62A-08 1535h

Designing Effective Professional Development for Elementary Teachers of Science

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There is a great desire for effective science professional development among teachers in the elementary grades. While the majority of time in the elementary classroom and in the area of professional development is spent on language arts, there is strong interest and motivation among teachers to develop expertise in science teaching. In the primary grades, instruction is often integrated across the curriculum. This allows for innovative ways to teach science in the early grades: related science topics can be taught in combination and science can be effectively linked with other content areas such as language arts and art. With this in mind, we developed an Elementary Educator Workshop combining Earth and Space Science topics and activities developed by the Sun Earth Connection Education Forum (SECEF) and the Bay Area Earth Science Institute (BAESI). As a result of this collaboration, we identified a number of strategies for designing an effective inquiry-based educator workshop. A discussion of the steps toward designing effective science professional development in a workshop setting will include: teacher recruitment; maximizing the workshop setting; designing an effective inquiry-oriented workshop format; building a robust presentation team; integrating hands-on activities; making content accessible to teacher participants; integrating standards; strategies for workshop pacing; addressing the needs of teachers at different grade levels; and, finally, effective workshop assessment.

ED62A-09 1550h

Teacher Education Addressing the Continuum of Prospective, Beginning and Experienced Teachers, in Sun-Earth Connection Science

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The NASA Sun-Earth Connection Education Forum (SECEF) at UC Berkeley has partnered with San Francisco State Univ. (SFSU) in efforts to improve the K-12 teaching of Sun-Earth science, via undergraduate education, pre-service teacher preparation, and in-service teacher professional development. As recommended prominently in the NRC report Educating Teachers of Science, Mathematics, and Technology (2001) and elsewhere, teacher education should be viewed as a seamless continuum that begins early on with prospective teachers, addresses the particular needs of beginning teachers, and provides opportunities for the effective development of experienced teachers.

The efforts of SECEF at SFSU in undergraduate education have focused on the university's Introduction to Astronomy course, particularly its laboratory component. This general education course is required of all future secondary science teachers, as per the California Commission on Teacher Credentialing (CCTC) standard for breadth of preparation in the sciences. The efforts of the astronomer-astronomy educator-science teacher educator team are guided by: the professional development standards of the "National Science Education Standards" (NRC, 1996); the college teaching recommendations in "Science Teaching Reconsidered" (NRC, 1997); the research summarized in the "How People Learn" volume (NRC, 2000); and the guidelines from NSTA's "College Pathways to the Science Education Standards" (Siebert and McIntosh, 2001). Modifications of the lectures and laboratories on Earth-Solar System and Sun-Earth-Moon relationships have included the introduction of new hands-on experiences and more inquiry-based approaches.

The pre-service teacher education component of SECEF and SFSU has involved both future elementary and secondary science teachers. The teacher credentialing programs at SFSU require a science methods course for both groups. This effort is guided by the professional development and teaching standards of the "National Science Education Standards" and the CCTC professional preparation program standards, as well as the recommendations in "How People Learn" (NRC, 2000) and "Educating Teachers of Science, Mathematics, and Technology" (NRC, 2001). SECEF supported the development of a successful new GEMS guide, "The Real Reasons for Seasons" (Gould, Willard, and Pompea, 2000), and this has been used in the elementary and secondary methods courses as an example of a pedagogically sound curriculum that in particular takes into account students' understandings prior to instruction.

Sun-Earth Connection Astronomy for Teachers (SECAT) has been the third primary effort of SECEF and SFSU, and is a professional development experience for beginning and experienced secondary science teachers. The primary goals of SECAT have been to improve teachers' content understanding and develop their teaching resources. In addition to being informed by the previously mentioned sources, this effort also draws on "Designing Professional Development for Teachers of Science and Mathematics (Loucks-Horsley, Hewson, Love, and Stiles, 1998) and "Preparing and Directing a Teacher Institute" (Mason, 1993). Summer and academic year experiences have included field trips to Sun-Earth astronomy research and education sites, observations with a simple solar telescope, construction and use of other simple observing instruments, exploration of print and Internet resources (especially SECEF ones), and development of a teaching box of instructional plans and resources.

URL: http://sunearth.ssl.berkeley.edu

ED62A-10 1605h

Teaching the Teachers: Results from 14 years of innovative teacher training

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For the past fourteen years, a collaboration of Rice University and the Houston Museum of Natural Science has trained over 5000 math and science teachers. Some of these have had very intensive, summer-long experiences doing actual field research, writing research papers and curriculum products; some have had only hour-long workshops at NSTA or other teacher meetings; others have had semester-long credit courses.

The summer-long teachers are now at least 10 years from their experience. Following these teachers in their subsequent careers has been very rewarding. One of our alumni is now Head of Science at the Houston Independent School District; one is head of the Magnet Program; one is head of the Rice Model Lab; one is a director of a Challenger Center. Others are leaders in their schools or districts, and of course, not a few have retired in the interim. All have commented that the tools and the professionalism that the summer provided them have been extremely valuable to them. One said "I hated it when you forced us to learn computers and the internet. But when our schools became computerized, we could teach the others!" Of course, we were fortunate to have the cream of the crop, so we don't claim their successes as our own.

Our newest effort is a "Masters of Science Teaching" program, providing content knowledge and tools for teachers of Math and Science. Teachers take content courses (often supported by NSF or NASA grants at special reduced tuition rates, with Rice University waiving most of the costs), education courses to help their classroom skills, and technology courses to teach them the tools of modern science. Four teachers are presently in the 30-hour program. They help with the other teacher courses as their practicum hours.

The teachers in our courses "Teaching Earth and Space Science", "Astronomy for Teachers" and "Teaching Astronomy Laboratory" are field testers for our educational CD-Roms "Earth Update", "Space Update" and "Space Weather". Over 50,000 of these CD's have been distributed to teachers and museums.

URL: http://space.rice.edu/MST

ED62A-11 1620h

Solar System Ambassadors: Effective Long Distance Training on a Low Budget

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The Solar System Ambassadors Program is a public outreach program designed to work with motivated

volunteers across the nation in all 50 states and Puerto Rico. These competitively selected volunteers convey the exciting discoveries and plans in space research, exploration and technology through non-traditional forums; e.g. community service clubs, libraries, museums, planetariums, "star parties," mall displays, etc.

One of the challenges of running a low-budget, nationwide program is adequately instructing these volunteers over long distances and different time zones. For the past 2-1/2 years, the process of educating Ambassadors has evolved into a refined system that not only allows for mission-related topics, but supports enrichment subjects as well.

Ambassadors participate in on-line (web-based) training sessions that provide interaction with NASA scientists, engineers and project team members. As such, each Ambassador's experience with the space program becomes personalized. Training sessions provide Ambassadors with general background on each mission and educate them concerning specific mission milestones; eg, launches, planetary flybys, first image returns, arrivals, and ongoing key discoveries. On-line archives of each session's materials and training transcript provide Ambassadors with a personal reference library of mission-related information. Supplemental hard-copy materials are sent to each Ambassador, as available, to reinforce his/her knowledge of each mission's goals and events.

Integrating volunteers across the country in a public-engagement program helps optimize project funding set aside for education and outreach purposes, establishing a nationwide network of regional contacts. At the same time, members of communities across the country become an extended part of each mission's team and an important interface between the space exploration community and the general public at large.

URL: http://www.jpl.nasa.gov/ambassador/front.html

ED62A-12 1635h

Earth Science by Design: A Novel Approach to Professional Development

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Earth Science by Design (ESBD) is a three-year project funded by NSF to develop and publish a program of professional development in Earth science for middle school teachers. Based on the work of Wiggins and McTighe (1998), its goal is to help teachers become more effective designers of curriculum units for their classrooms. Teachers begin the program by participating in a two-week summer institute in which they learn the principles of "backward design". ESBD helps teachers organize their teaching around the "big ideas" in Earth science (NSES and Benchmarks), develop essential questions that give meaning to instruction and inquiry, create performance assessments, and identify visualizations such as satellite images to incorporate into their teaching. During the institute, earth scientists engage teachers in activities that help teachers to focus on the "big ideas" of Earth science and learn how to incorporate visualizations into their teaching. The workshop leaders also help teachers to frame curriculum units around central questions that serve to unify various disciplines of science through an Earth systems approach. As a result, teachers begin to explore and think about science content in a much deeper way than is often practiced in classrooms or presented in science textbooks. After they become comfortable with the approach and the science content, each teacher participant designs a classroom unit that they wish to teach. Teachers research the content and consult with scientists on content issues. During the school year following the institute, they teach the unit and are observed by the project team and by a teacher peer. Teachers attend two two-day conferences at which they receive further professional development and share the results of the teaching of their units. ESBD will be evaluated and revised for the summer of 2003. The final project product will be a professional development handbook and web site that scientists and school district leaders can use to implement ESBD throughout the country. At this session, we will share the design of the program and what we have learned to date about effects on teacher behavior in the classroom and student learning.

URL: http://esbd.terc.edu

ED71A MCC: Hall D Sunday 0830h

Faces of Diversity: Profiles of Women Geoscientists Posters *(joint with G, OS, S, SA, V, PA)*

Presiding: **R Johnson,** University Corporation for Atmospheric Research/National Center for Atmospheric Research**; C O'Riordan,** American Geophysical Union

ED71A-0041 0830h POSTER

Profiles of Women Geoscientists on the Internet: Where are They, Who are They Written For, and Is Anyone Looking For Them?

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The internet is a powerful tool that can be used to transfer information, and it can be especially valuable to share information about women in geoscience careers. However, there is a paucity of information on the internet that highlights women in geoscience fields. Two notable websites, the Association for Women Geoscientists (AWG) (http://www.awg.org/eas/profiles.html) and Woods Hole Oceanographic Institutes Women Exploring the Ocean (http://www.womenoceanographers.org/) have excellent details on the backgrounds and experiences of women in these disciplines. Yet beyond these web sites, individual profiles are incorporated into other sites and difficult to find.

The format of women geoscientist career profiles varies greatly. Some profiles have more of a resume listing where the individual received their degrees, dates and titles of job positions, awards, etc. Other profiles are informal and more of a narrative, detailing what first interested this woman in the geosciences and what has been the most interesting and challenging parts of her job. Clearly, the target audience for these profiles is different. If we wish to place profiles of women geoscientists on the internet, it is important that we keep in mind the focus of who we want to reach with this information.

The question also exists if anyone is searching for profiles of women geoscientists on the internet. I have a website that is a clearinghouse of information about women in science and career profiles of women geoscientists (http://www.sciencecareersweb.net/). A tracking program connected to the website documents usage statistics, such as what keywords are entered into internet search engines to bring people to different parts of my website. Surprisingly, few internet searches are being done with the key terms women geoscientists. Are individuals not interested in this information, or are they not aware that these resources are available to them?

It seems as if more can be done to increase the visibility and quantity of information to current professionals and young up-and-coming female students considering a career in the geosciences. This lack online resources is a hurdle and challenge we should attempt to change to strengthen the female representation in the geoscience discipline.

URL: http://www.sciencecareersweb.net/

ED71A-0042 0830h POSTER

Update on the Gender Gap in Geophysical Sciences Research

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In 2002, what progress has been made in recruiting and retaining women in geoscience fields? We will describe the academic pipeline and the critical transition points for women in science including data over the last 15 years on the representation of women among degree recipients in both geoscience and related disciplines. We will include data on women among African Americans and Hispanic Americans who have earned degrees in the geosciences during the last decade. We will also review where the women are in the geoscience workforce and how this has changed over time. Finally, we will propose for discussion some initiatives for change in policies for women in science both within and outside of academia.

ED71A-0043 0830h POSTER

Does size matter?

Elise A Ralph (218-726-7627; eralph@d.umn.edu)

Large Lakes Observatory University of Minnesota-Duluth, 109 RLB 10 University Dr., Duluth, MN 55812

What are the benefits and challenges of being a female research professor at a small university? Stepping off the "fast-track" is seen as an appealing option to many women as a way of balancing multiple priorities of family and research interests. However, there are unique challenges at being at a small university. This presentation will highlight some of my experiences that have allowed me to successfully conduct scientific research at a small university.

ED71A-0044 0830h INVITED POSTER

An example of woman scientist in France

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Although the presence of women in sciences has been increasing in the past few decades in Europe, it remains incredibly low at the top levels. Recent statistics from the European Commission indicate that now women represent 50 per cent of first degree students in many countries. However, the proportion of women at each stage of the scientific career decreases almost linearly, reaching less than 10 per cent at the highest level jobs. From my own experience, I don't think that this results from sexism nor discrimination. Rather, I think that this is a result of complex cultural factors making women subconsciously persuaded that top level jobs are destined to male scientists only. Many women scientists drop the idea of playing a role at high-level research, considering it is a way of exerting power (a matter reserved to men). Others give up the possibility of combining childcare and high level commitments in research. And too many (married women) still find only natural to sacrifice their own scientific ambitions to the benefit of their spouse's career. In this poster, I briefly present my personal experience. I chose to prioritize scientific productivity and expertise versus hierarchical responsibilities. Besides I tried to keep a satisfactory balance between family demand and research involvement. This was indeed facilitated by the French system, which provides substantial support to women's work (nurseries, recreation centers during school holidays, etc.). To my point of view, the most promising way of increasing the number of women at top levels in research is through education and mentality evolution

ED71A-0045 0830h INVITED POSTER

Two career chaos

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When I finished graduate school I suppose I imagined myself as my dad. He worked hard, loved his job and family, made a good living. But I also saw myself as my mom - making a home, raising kids, cooking dinner, saving the world. I thought: I can handle being my mom and my dad. I can handle being a scientist and a mother. I can DO this.

What I never imagined was the chaotic dynamic of the two career couple. The motions of bodies moving in response to the force of gravity cannot be predicted exactly if there are too many bodies. They dance in a jerky jumble, now faster, then slowly, bouncing, jostling, bumping and flying apart. Just so are the career trajectories of the two career couple. One rises up, the other, slower, pulls it down; overtaking, blocking preventing, now supporting, pulling along, now holding back - not moving, leap frogging, racing in opposite directions and snapping back together with a crack.

The problem is non-linear. The outcome depends on feedback, whether positive or negative. The outcome cannot be predicted. Cannot be determined.

Perhaps it cannot be done. Perhaps both husband and wife cannot be both mother and father. Too many mothers, too many fathers. Chaos.

But I believe it can be done. Not like our mothers and fathers but a different way. And maybe our jerky paths will keep us sharp, make us work harder, and lead us through lives that at least cannot be described as dull.