Section 2 Making Weather in Class

A significant number of the NOAA and NASA researchers participating in LIVE FROM THE STORM look back to some kind of severe weather event in their childhood which left them fascinated by—and in some cases, fanatical about—the weather. But others point to experiences in grade school where a teacher "exposed them to the elements" in class and set them on their various paths to a professional interest in meteorology. This Section of the Guide pulls together 6 sets of extremely easy-to-implement Activities that use low-cost and familiar materials. Selecting from this menu of options you can connect impressive real world weather events—lightning, tornadoes and rainbows—to phenomena students can explore hands-on. Other Activities bring to life some fundamental if less dramatic weather processes—how clouds form, the nature of and how to measure the dew point, and how warm and cold fronts interact. In the course of these engaging activities there'll be plenty of opportunities to introduce and make meaningful the terminology and essential concepts that are suggested in the National Science Education Standards that can be realized through looking at weather and climate. (See Correlation Chart provided. In this, as all Sections, we suggest you have this with you as you review each Activity prior to working on them with your classes.) It would be hard to implement this rich suite of Activities in class and not have students look at the weather differently ever after, connecting real world phenomena with the fundamental scientific principles behind them.

Each Activity in this section is introduced with the usual Teacher Background, Learning Objectives, Vocabulary, Materials list, etc. But because we hope students themselves will be the ones implementing the Activities, you'll find the *Worksheet* pages contain many of the step-by-step Procedures that are the heart of each Activity. We suggest you also have the Worksheets beside you as you read the Guide.

P2K knows that classrooms vary greatly in what teachers feel appropriate for direct student involvement, with matches, hot water, glassware, goggles, etc., being treated very differently depending on grade level and local policy. Some of these Activities are therefore presented as optional Teacher Demonstrations. As in all P2K projects, there are several places where a review of the LIVE FROM THE STORM website or videos is suggested: as we note in EDUCATORS/RESULTS, one of our major NSF-supported evaluations found that learning outcomes were positively affected by the integrated use of multiple media. Students will learn more if the fun of making a twister in a bottle is enriched by seeing real tornadoes with informed eyes after the hands-on experience and then connecting to real world research via SITE TOURS, BIOgraphies, FIELD

JOURNALS and RESEARCHER Q&A, as well as by following the many URLs provided to other excellent resources.

A note on "Activity Stations"
In the Video that is a key part of the Teacher Resource Kit you'll see master teacher Eileen Bendixsen implementing 4 of these 6 Activities (clouds, dew point, lightning and tornado) at a series of Activity stations dotted around her regular 7th grade classroom, allowing students to rotate from one 15-20 minute Activity to another short Activity within one period and covering them all, reflecting on the experience and writing up results within 2 or 3 periods. Participants in previous P2K Modules have found this a very effective way to expose as many students as possible to as many hands-on experiences as time permits. It also allows students to share experiences verbally and in writing, learning from each others' observations and procedural challenges. You can find out more about how to make this approach work successfully in the TEACHER TIPS section of EDUCATORS at the LIVE FROM THE STORM site.

You can also see in the Video that this results in a fair amount of student excitement and—we admit—vocal thunder and lightning! But as one student working on "Hurricane Houses" (Activity 4.3) remarked, "Why does learning have to be boring? If I'm having fun it makes learning that much easier." (You'll see in the TRV that her principal agreed.) We hope this set of Activities works well for you and your students: please share your own experiences with your peers via DISCUSS-STORM. With your permission, we'll add the most illuminating to EDUCATORS/TEACHER TIPS online.

The Guide is available online in **PDF format**, activity by activity. However as those of you who've used recent PTK projects such as LIVE FROM THE RAINFOREST and LIVE FROM THE SUN know, we try to make the printed Guides superior in design as well as content. "Teachers and students deserve the best." Yes, you can get all the above "free" on the Net, but we think you'll be even happier with your $30.00 order of the Guide, worksheets and an oversize full-color poster! Sometimes people equate "free" with valueless, and we sure hope no-one thinks that about this Guide!

If you have any questions about the Guide, please direct them to
ptkinfo@passporttoknowledge.com