

This digital version of the PASSPORT TO WEATHER AND CLIMATE Teacher’s Guide is made available online as a service to educators for use in class or at home with students. This Guide is copyrighted and may *not* be reprinted, embodied or excerpted in any other publication in any format now known or hereinafter developed for commercial purposes of any kind without the express, written permission of PASSPORT TO KNOWLEDGE [ptkinfo@passporttoknowledge.com](mailto:ptkinfo@passporttoknowledge.com)

REAL SCIENCE  
REAL SCIENTISTS  
REAL LOCATIONS  
REAL LEARNING

CONTENT  
CONTEXT  
CONTACT  
COMMUNITY

100% HANDS-ON, 100% VIDEO, 100% ONLINE

How to implement PASSPORT TO WEATHER AND CLIMATE

PASSPORT TO WEATHER AND CLIMATE and the LIVE FROM videos and website, like every P2K project, offer a rich set of integrated, multiple media components. If this is your first PTK experience that may sound like a mouthful. But P2K “vets” can and will, via the DISCUSS-STORM online forum, tell you that once you try it you’ll be a believer in the power of the unique and effective learning opportunities P2K provides.

So let’s deconstruct the buzzwords:

*Multiple media* means that P2K combines the power of the 3 “T”s—technology (the Internet as communication tool as well as a vast storehouse of information), television (videos both as broadcast and videotape, as well as streaming video on the WWW) and the teacher (implementing hands-on, project based Activities like those offered in this Guide)—to provide a current, pedagogically sound and thoroughly engaging learning experience that takes both you and your student “out of the box.”

*Integrated* means that you and your students will benefit most if you use all 3 media. We describe P2K projects as “100% hands-on, 100% video and 100% online”—which reflects the fact that sometimes 1+1+1 is much more than 3. Each component delivers more powerful learning opportunities if used together than using any one alone.

Does that mean that you *have* to implement P2K in only one, approved way? Not at all: there are some TEACHER TIPS both in this Guide and online, but all P2K Modules are extremely flexible, and can deliver success for your and your students in classrooms with widely varying amounts of technology—from access only at teacher’s home, to the one computer class, to fully-equipped labs. PTK projects can also be adapted up and down to work with students in elementary grades as well as those in high school.

Let’s take each component in turn and describe its unique contribution. (Copy master A.1 provides 3 options to help you choose your own selection of Activities and interactions from the broad menu we provide: there’s “economy”, “moderate” and “luxury.”)

### 100% Hands-On—THE CONTENT

There are more than 30 Activities in this Guide which embody key scientific concepts related to weather and climate which students will also see brought to life in the videos and online. As you’ll see by referring to the STANDARDS CORRELATION foldout, the Activities also coincide with a significant number of the National Science Education Standards that most teachers are now required to cover. This Guide can only present *national* standards, not 50 different sets of state guidelines, but online at the LFSTORM site you’ll find state-by-state correlations that show you more clearly how PASSPORT TO WEATHER AND CLIMATE can function effectively as a substantive curriculum replacement unit.

Opening Activities are designed to familiarize your students with what they’ll be doing during the project, to introduce some key concepts and vocabulary and also enable you to establish a baseline of pre-existing knowledge for assessment and evaluation purposes. Some of these Activities can be done either in class or assigned as homework. You and your students can discuss expectations and set learning goals which can be evaluated at the conclusion of the unit.

Each Section of the Guide is organized around one of our key themes (What Makes Earth’s Weather, Making Weather in Class, Recording and Tracking Weather, and Weather, Climate and Society.) Certain Activities, such as 3.5 Storm Tracking with Doppler Radar, are novel simulations of procedures and tools used by weather researchers. Real world counterparts to the classroom simulations will be seen in the videos and online. All necessary Student Worksheets and handouts are included as copy masters for easy duplication. If you are team-teaching, there are social studies, language arts, math and technology extensions for some of the Activities. “Suggested URLs” have been reviewed by our educator advisory team and the best ones are listed with brief descriptions.

Closing Activities allow you and your student to review concepts, procedures and experimental outcomes to assess what has been learned and to evaluate how well the learning goals stated at the outset have been accomplished.

### 100% Video—THE CONTEXT

The videos take your students on location to research sites and scientific laboratories that are usually not accessible to the public. They'll go behind-the-scenes at NOAA's Storm Prediction Center in Norman, OK and travel to the Ivory Coast to see an international experiment designed to wire the Atlantic, source of America's East Coast hurricanes. Speaking of hurricanes, they'll fly through and around one, and see how "Dopplers on Wheels" and giant balloons are used to study winter storms. They'll visit NASA's Goddard Space Flight Center, and see some of the amazing visualizations created from NOAA's GOES satellites. And most importantly, they'll meet the enthusiastic and impassioned men and women behind some of the most interesting and sophisticated experiments on weather and climate being done today. And once they've met them in the videos, they'll be able to simulate some aspects of their experiments in class and then interact with many of them online. Despite our programs' LIVE FROM THE STORM name you do *not* have to watch the videos live, nor in one hour-long session. While viewers of the live broadcasts will be able to interact with scientists in real time, several of the researchers will be available for online interaction during the rest of the school year. You can use the videos in convenient 8-10 minute segments, with multiple classes and at any time. (See the excellent suggestions for how to use video as an instructional tool from education researcher and public television education consultant Faith Rogow-Teacher Reference Sheet TV.1)

### 100% Online—CONTACT and COMMUNITY

As we've all come to realize, the Internet is truly revolutionary, perhaps as historic a development as Gutenberg's printing press. PASSPORT TO WEATHER AND CLIMATE utilizes the power of this new technology to bring your students experiences which cannot be delivered using more traditional media. There are 4 basic components to our online resources:

- **INFORMATION:** direct access to real-time data, the latest images, explanatory graphics and news releases from sources like NOAA's National Weather Service, whole earth weather from the GOES and POES satellites, the latest visualizations from NASA's TRMM and SEAwifs satellites and much more. You'll find the website is organized around the WHO, WHAT, WHERE, WHEN and WHY of weather, providing key information on site, while linking to the best of all other resources on the Web.
- **INTERACTION** with weather and climate researchers: Using RESEARCHER Q&A, your students can send individual questions to researchers, and receive back—within 1-2 weeks—individual responses. Each Q&A is then archived to form a growing and evolving resource that other students can search and access. Special software ensures the scientists don't get overloaded and keeps your students' e-mail addresses and full names private. FIELD JOURNALS and BIOographies bring weather and climate research to life in memorable anecdotes and incidents and interactive SITE TOURS introduce the real-world locations our video crew visited.

- INTERACTION with other educators: the DISCUSS-STORM mail list (e-mail based) provides a *virtual* but *very real* faculty lounge—a place to ask questions not answered in this Guide, to share resources, to brainstorm with your colleagues across the country and even around the world. UPDATES-STORM is an e-mail newsletter bringing you weekly project news, such as the content of upcoming videos, pointing to late-breaking weather and climate events, and distributing e-mail versions of the FIELD JOURNALS and BIOS. Join WRITE-STORM to share student writing about severe weather or FOLLOW-STORM to link your students with researchers who'll explain—in close to real-time—what's going on behind the headlines and TV weather bulletins.
- COMMUNITY: there's lots of talk about “virtual communities” but PASSPORT TO KNOWLEDGE has seen it happen and we know it's a real and valid part of projects like LIVE FROM THE STORM. Look at the archives of discussion groups from previous projects for examples of the kind of teacher-to-teacher support that's possible. Check out the EDC/Center for Children and Technology's External Evaluation of earlier PTK projects (under the EDUCATORS/RESULTS section of the website) to see how teachers like you have successfully used this kind of resource. Note the MENTORS who are prepared to answer your specific questions. Then sign on, take a tour, subscribe to the mail lists and share your ideas and your questions with a community of teachers, all lifelong learners like yourself, all innovators creating the new world of interactive learning which the Internet permits.

Online, just as in your classroom, it's you who'll be making it all happen, but be assured you've got a lot of creativity, encouragement and support behind you!

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](mailto:ptkinfo@passporttoknowledge.com)