

“EXPLORING THE SOLAR SYSTEM”: A MODEL FOR TEACHER WORKSHOPS AND SCIENTIST-EDUCATOR PARTNERSHIPS. Marilyn Lindstrom¹, Jaclyn Allen² and Robert Fitzmaurice³ 1) SN2 NASA-JSC, Houston TX 77058; 2) Syscom, Houston TX 77058; 3) AP2 NASA-JSC, Houston, 77058.

“Exploring the Solar System” is a teacher workshop to be offered this summer at NASA-JSC. The workshop will provide teachers with scientific knowledge, experiences, and materials to improve their teaching of astronomy and planetary science and to integrate these subjects into their Earth Science curriculum.

The workshop is co-sponsored by scientists and educators at JSC and is an example of a scientist-educator partnership. The role of the scientists is to provide the content and lab experiences; that of the educators is to facilitate teacher participation and insure that the content is presented in an appropriate manner. In addition to the JSC co-sponsors, scientists and educators from Space Center Houston, the Lunar and Planetary Institute, and local schools are planning the workshop.

The workshop is organized around five major topics: 1) The Sun and stars in the galaxy; 2) The planets in our solar system ; 3) The Moon and lunar samples; 4) Meteorites and asteroids; and 5) Mars and martian meteorites. Because of our division’s emphasis on extraterrestrial rock samples and exploration, we choose to highlight the last three topics and just give introductions to the first two topics.

NASA headquarters Space Science and Education divisions have facilitated the involvement of scientists in education by preparing abundant educational materials to provide space science information and classroom activities. These include teacher guides with activities, education briefs, models, puzzles, rock sample disks, lithographs, slides, videos and software. These are available to both teachers and scientists. We have assembled a collection of these materials to guide the workshop and will provide them to the teachers to use in their classes. A partial list of these educational materials is included in the workshop outline.

The plan for each of the topics will involve the same general outline. It will begin with an introductory activity from the educational materials. Once the teachers are engaged in the topic we will present background information and slides or videos. Participating in additional activities will reinforce the background concepts. Tours, real laboratory experiences, and guest speakers will make science real for the teachers. This is an essential part of the workshop, not just show and tell, because it helps to demystify science. Concluding activities for each topic will help to tie concepts together and show how to fit the topic into the teacher’s curriculum. In debating the length of the workshop we thought that one week would give teachers the basic content and familiarity with materials and brief tours of the scientific sites. A two week workshop would allow for more in-depth tours with real laboratory experiences and more exposure to other scientists as guest speakers. We decided to give a two-week workshop.

“Exploring the Solar System” can serve as a model for other workshops to be given by other NASA centers, institutes, or universities. The essential elements are the scientist and educator partners, and the educational materials which are available from NASA. Education partners can be contacted at education or public affairs departments of NASA centers, institutes, or universities, at local school districts, or science museums and planetariums. The science and education partners would review the educational materials and add their own products if appropriate. They would select topics to emphasize based on their own scientific expertise. In this way the general model could be used to guide several different workshops at various sites.

“Exploring the Solar System” Workshop Outline

- Introduction** **1-2 hours at JSC**
Participant introductions, logistics, workshop goals, schedule
- Topic I. Exploring the Galaxy** **1+1/4 day at JSC/museum**
Materials: *Space-Based Astronomy (EG-102)*, *Astro 1 (EP-274)*, *Great Observatories models (PED-136)*, *How Big is the Universe? (PMS-029)*, *The Sun (EB-106)*, *Supernova (EB-88)*, *Black Holes (EB-114)*
Speakers: The Sun and stars, astronomy measurements
Tour: Planetarium (museum)
- Topic II. Exploring the Solar System** **1+1/2 day at SCH**
Materials: *Our Solar System-Geologic Snapshot (NP-157)*, planet lithos, *Charting the Planets (EB-111)*, *Solar System puzzle (PED-133)*
Speakers: Planetary astronomy; planetary geology, missions
Tour: Space Center Houston + JSC tour
- Topic III. Exploring the Moon** **2 days at JSC**
Materials: *Exploring the Moon (EP-306)*, lunar sample disks
Speakers: Apollo missions, future exploration
Lab experiences: Lunar lab + mineral/petrology & experimental petrology
- Topic IV. Exploring Meteorites** **2 days in JSC**
Materials: *Exploring Meteorite Mysteries (EG-104)*, meteorite sample disks
Speakers: Antarctica, meteorites, asteroids
Lab experiences: Meteorite lab + geochemistry & impact experiments
- Topic V. Exploring Mars** **2 days at LPI**
Materials: *Exploration of Mars (EB-112)*, various Mars activities, Mars meteorite display sample (JSC)
Speakers: Mars geology, meteorites, future exploration
Tour: LPI Planetary Image Facility
- Wrap Up** **1/2 day at JSC**
Education discussion, wrap up, evaluation, plans for follow-up
Tour: Observatory (museum) - optional depending on weather