

C. Ossola¹ ossola@dipteris.unige.it, M. Cattadori² mcattadori@gmail.com, M. Veneruso³ mariacira.veneruso@gmail.com, M. Macario⁴ maddalena.macario@fastwebnet.it

¹ Italian Antarctic Museum, Genova, Italy; ² Trento Science Museum, Trento, Italy; ³ Istituto Comprensivo Como Rebbio "Fogazzaro", Como, Italy; ⁴ School of Science and Technology, University of Camerino, Camerino, Italy

what is SPEs ?

A Polar Summer School for Italian science teachers of secondary schools (11-18 years of age). The SPEs [ref 1] was organized by the Italian Antarctic Museum (MNA [2]) and is a two-year project funded by the Ministry of Education, University and Research in the framework of the National Programme of Antarctic Research (grant 2009/C2.01, PEA2009).

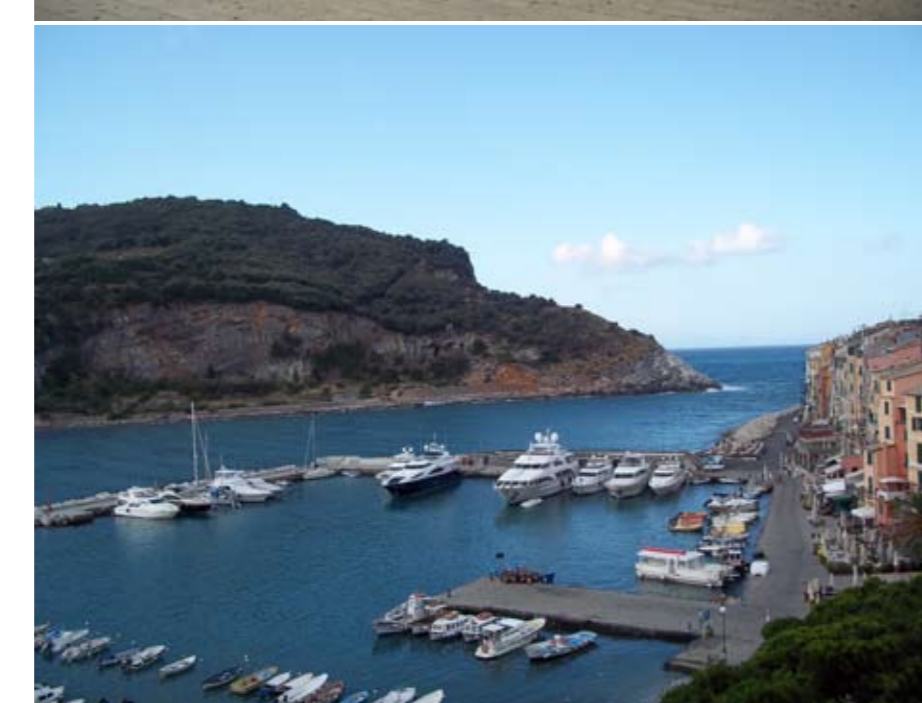
The school hosts 12 teachers and includes:

- free refresher training that provides teachers the tools to work on polar science issues at school;
- taking part in a contest called "Activity for Antarctica" to develop a new educational polar science activity (hands-on, classroom/lab activity or other);
- the winner of the contest joins the XXVII Italian Antarctic expedition (2011-12) as a member of the research project "LTER - Observatory of the Marine Protected Area of Terra Nova Bay (TNB-MOA)" [ref 3].

the main goals

- stress the relevance of polar sciences in school science curricula;
- inspire teachers to develop innovative educational projects thanks to the interdisciplinary nature of Polar Sciences;
- to develop active learning experiences that take advantage of this Continent's special allure to increase student motivation towards polar sciences;
- give birth to a network of Italian science teachers specialized in polar science education;
- foster new links between research – oriented science teachers and educational action – oriented polar researchers.

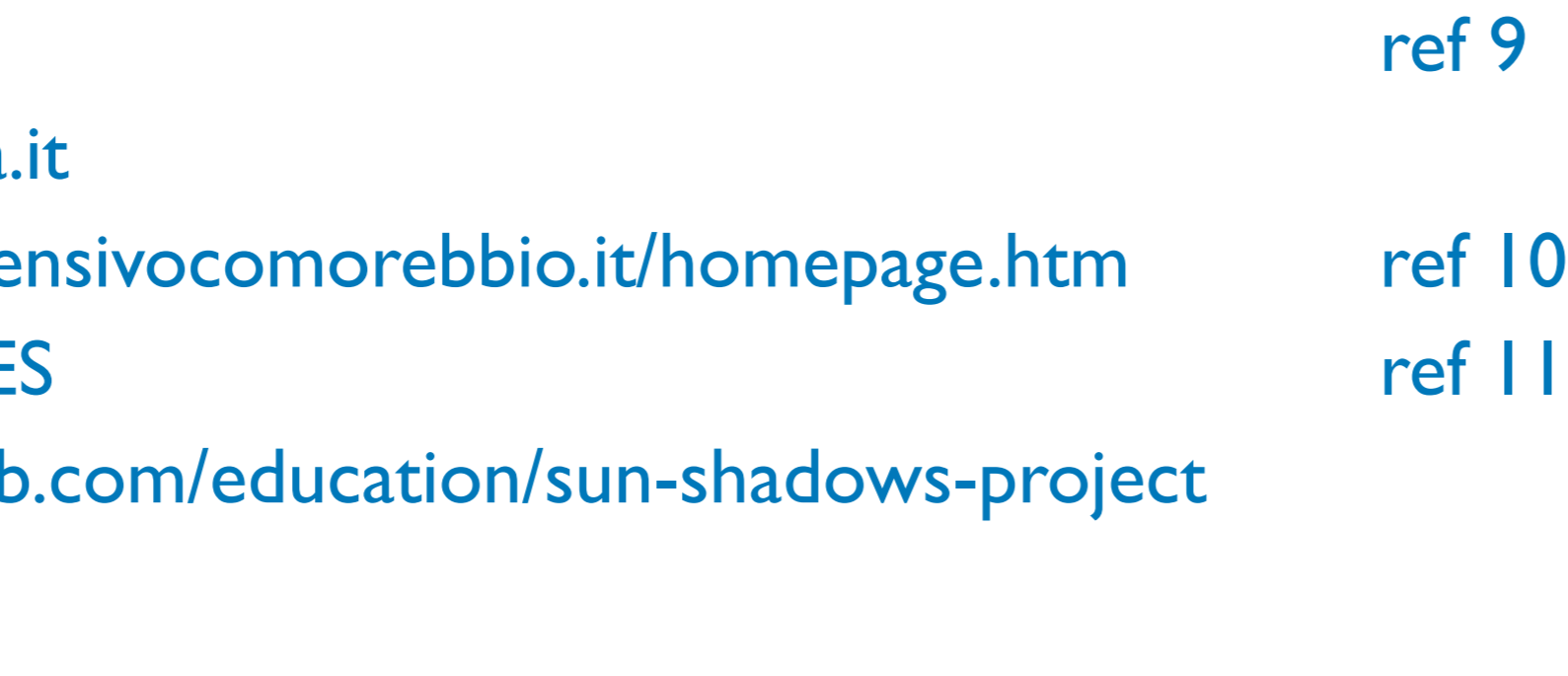
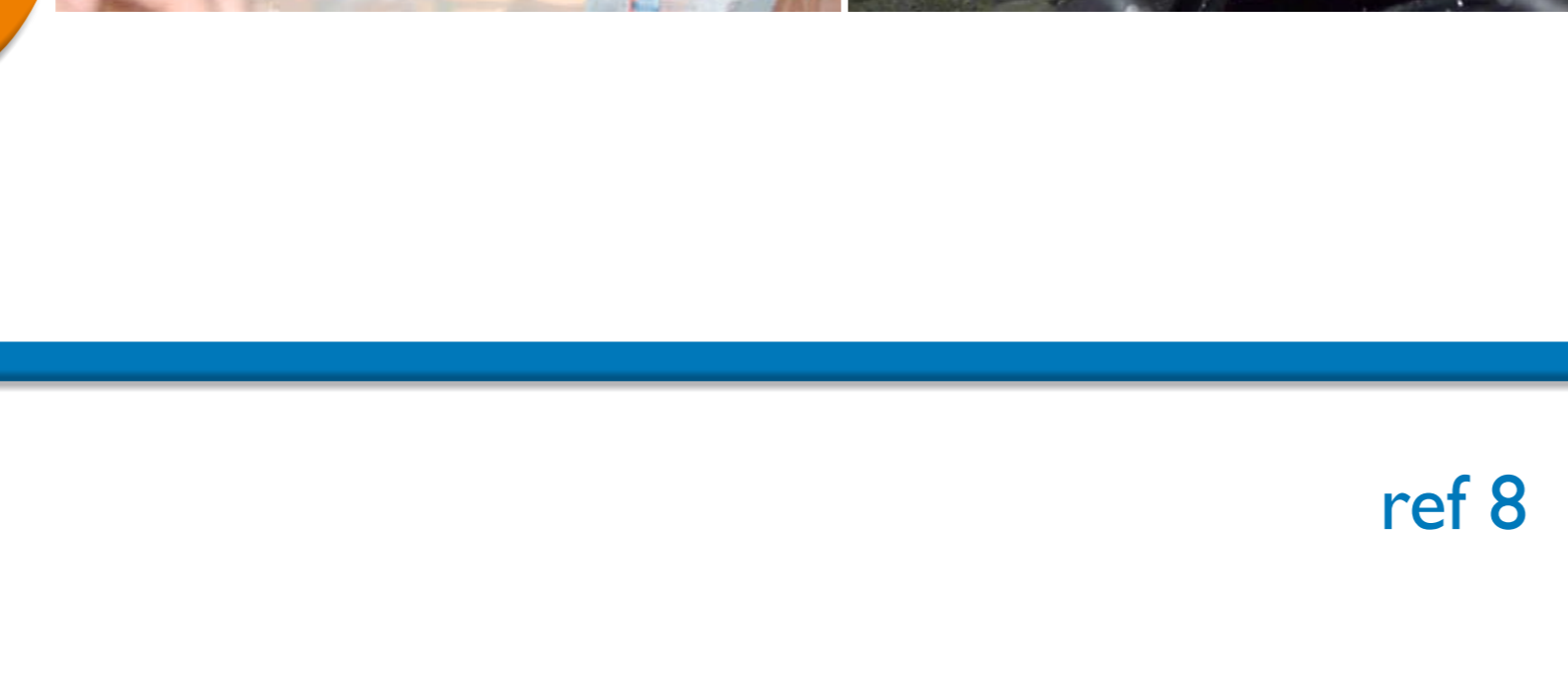
SPEs, first edition



The school took place at the Italian Antarctic Museum in Genoa from July 18th to 20th 2011 and at the Environmental Education Centre of Portovenere (SP) from July 20th to 22nd. 12 Italian Science teachers from different regions attended SPEs, selected among 58 applicants. Refresher training was split into 2 units, dedicated to Earth Science and to Life Science (Ecology and Biology). Each unit included sessions of two different kinds: lectures on current relevant polar research activities, delivered by Italian and international scientists, and educational workshops to try out and discuss experimental and/or hands-on activities for the classroom on polar science, so that teachers would be encouraged to make greater use of active methods once back at school.

A day trip at sea was also in the programme to learn environmental sampling techniques from researchers of the University of Genoa. Participants had online access to all SPEs training support material, which was available in a dedicated area of the website of "progettosmilla.it" [ref 4], one of the project partner.

After the training a steering committee selected the teacher that would join the XXVII Italian Antarctic expedition, taking into account the participant's CV, the educational activity they had submitted and the skills and attitudes showed during the SPEs. The winner of the contest was Mariacira Veneruso of the Istituto Comprensivo "Como Rebbio" (first-level secondary school, 11 to 14-year-old) [ref 5].



references

- ref 1 www.mna.it/spes
 ref 2 www.mna.it
 ref 3 www.lteritalia.it/
 ref 4 www.progettosmilla.it
 ref 5 www.istitutocomprensivocomorebbio.it/homepage.htm
 ref 6 www.mna.it/blogSPEs
 ref 7 www.ice.macisteweb.com/education/sun-shadows-project

- ref 8 www.radio3.rai.it/dl/radio3/programmi/puntata/ContentItem-38d0e8b7-843a-45f4-b22e-ccb241316065.html
 ref 9 www.rai.tv/dl/RaiTV/programmi/media/ContentItem-4d63ae9c-dd94-4b4c-a880-4d9bc9021225.html
 ref 10 www.facebook.com/groups/211871068865189
 ref 11 www.polarfoundation.org

the teacher in Antarctica

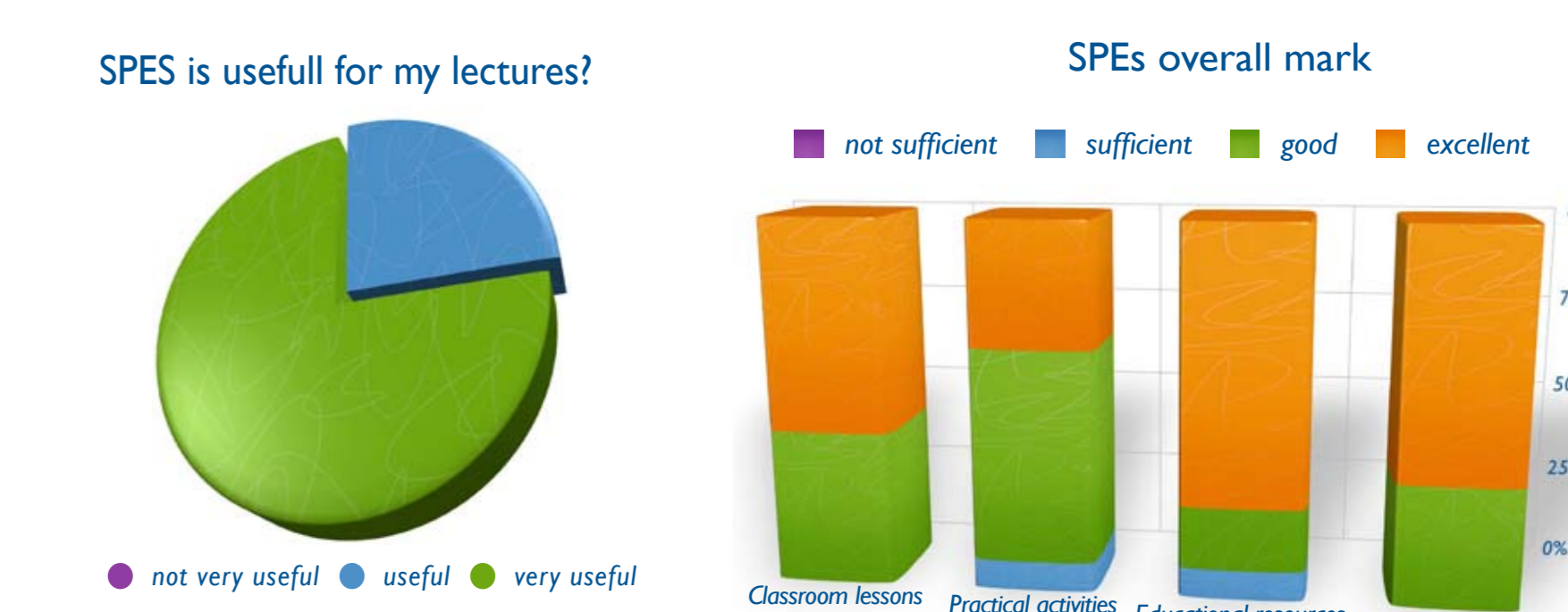
The teacher was based at the Mario Zucchelli Station (MZS), the Italian Antarctic base, from 10.1.2012 to 20.02.2012. Her activities included:

- cooperating with the researchers of the project "LTER - Observatory of the Marine Protected Area of Terra Nova Bay (TNB-MOA)";
 - keeping a blog to tell her personal and scientific experience [ref 6];
 - publishing on the blog short, popular articles to illustrate the aims, methods and results of LTER and of other research projects. Researchers supervised and reviewed all the articles before publication;
 - providing support to the international educational project "Sun Shadows" [ref 7];
 - participating live in national radio broadcasts (RAI-TV Radio3Scienza [ref 8] and RAI-TV RADIO2 [ref 9] and in a video-conference with the University of Milan Bicocca for an event dedicated to schools;
- Once back home, the teacher started working on an outreach programme that includes:
- skype conferences with the classes of other SPEs teachers;
 - public meetings for teachers, parents and school students;
 - an interactive photographic exhibition on Antarctica that also includes hands-on activities;
 - publishing articles in local and national newspapers and magazines.



results

SPEs participants provided their feedback by filling in a questionnaire made up of 30 points that covered all aspects of the initiative. The following figures illustrate some of the results collected. They show that, on the whole, participants gave SPEs very high marks.



In their replies they also declared that more opportunities for debate should be provided, both between researchers and teachers as well as among teachers themselves. This feedback corroborates the initial assumptions that SPEs was built upon, namely that teachers feel the need for greater attention and inspiration. During the current school year, the Italian Antarctic Museum is providing teachers with precious, day by day encouragement, support and assistance in educational polar science activity development. The tools used are a mailing service and a dedicated Facebook group [ref 10]. This activity is vital for the sustainability and continuity of the educational action triggered off during the SPEs school.

conclusions

In conclusion, some of the main achievements of the project are listed here:

- an initial core group of polar teachers, that use a Facebook group as main mean of communication, was created;
- a spontaneous cooperation with the International Polar Foundation [ref 11] at the "Sun Shadows" project was born;
- links and exchanges with other national and international polar science dissemination institutions – such as APECS, APECS-ITALY and PolarTeachers, were spontaneously created;

On the basis of these elements, the first edition of SPEs can be said to have reached its goals.

The Italian Antarctic Museum now aims to turn SPEs into a permanent school, dedicated to both polar regions, with the support of other Italian and international polar research institutions: ENEA (Italian National agency for new technologies, Energy and sustainable economic development), CNR (National Research Council), INGV, National Institute of Geophysics and Vulcanology) and IPF (International Polar Foundation).



SPEs partners

