The social network and the geo-hydrological information:
the CNR IRPI Facebook® page as example of communication

F. Fiorucci, C. Bianchi, I. Marchesini, P. Salvati, F. Fugnoli, and F. Guzzetti

CNR, Istituto di Ricerca per la Protezione Idrogeologica, via Madonna Alta 126, 06128 Perugia, Italy

{Federica.Fiorucci@irpi.cnr.it}

Good communication is a fundamental step for the spread of news and knowledge. The effectiveness and persuasiveness of a message is a function of the interaction of characteristics of the audience, the source of the message, and content of the message. An official Facebook page of the Italian Research Institute for the Hydrogeological Protection was created. The purpose of this page is to disseminate information on flood and landslide events and on our research activities, in order to raise awareness of geo-hydrological matters among users. This page publishes news on current or historical landslide and flood events involving the Italian territory, or news from around the world collected on the network. The facebook page is also linked to other IRPI web site. To understand if people are engaging with the content Facebook provides insights about people's activity. This information is important to understand who visits the page and what contents are more interesting for the visitors. https://www.facebook.com/CNR.IRPI

SOURCES OF POSTS

Many posts published on the Facebook page IRPI are external links to NEWS published on the web (blogs, online newspapers, other research organizations). Significant news are chosen among those provided by the google alerts service, that is daily checked to collect data and information on geo-hydrological events through the network. The news may consist on photos and videos but can also be links to articles related to landslides and flooding.

POLARIS, POpulation at RISk from LAndslides and floods in Italy, collects data and historical information on landslides, floods and other natural phenomena that have caused direct damage to the population (dead, missing, injured, evacuated). The web site POLARIS comprises four sections: Reports, Events, Focus and Blog. www.polaris.irpi.cnr.it.
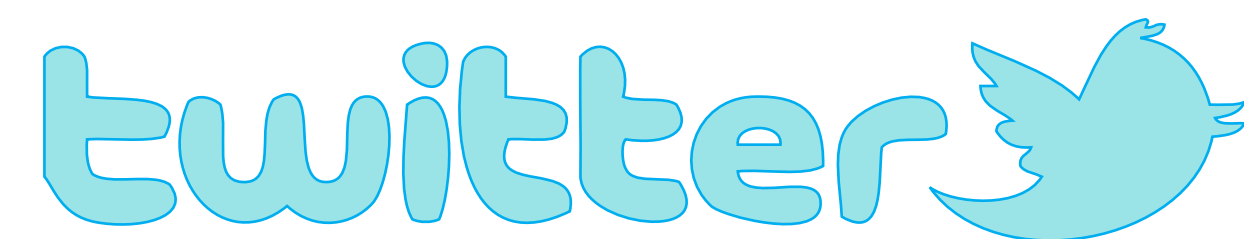
The TWITTER account linked to the Facebook page of the Italian Research Institute for the Hydrogeological Protection.The posts published on one of the two social platforms are automatically replicated to the other one. https://twitter.com/CNR_IRPI

The IRPI geomorphology website collects information on the research activities of the Geomorphology group at CNR IRPI in Perugia. The researchers are focused on: landslide mapping, landslide inventories, models to produce susceptibility and hazard maps, rainfall and hydrological thresholds for possible landslide occurrence, rock fall modelling, remote sensing, dissemination of information on geo-hydrological hazards and risk. The web site collects publications, reports and scientific and media communications. geomorphology.irpi.cnr.it

GeomorphologicalWatch is a collaborative (crowd) effort to collect information and data on where and when landslide, flood, and erosion events occur, or have occurred in the past. To contribute to this collaborative effort you do not need to be an expert in the field (i.e., a geologist, a geomorphologist, or an engineer) , although this may help you to provide more detailed information, and may help us to obtain additional technical information on the event and its consequences. www.events.irpi.cnr.it
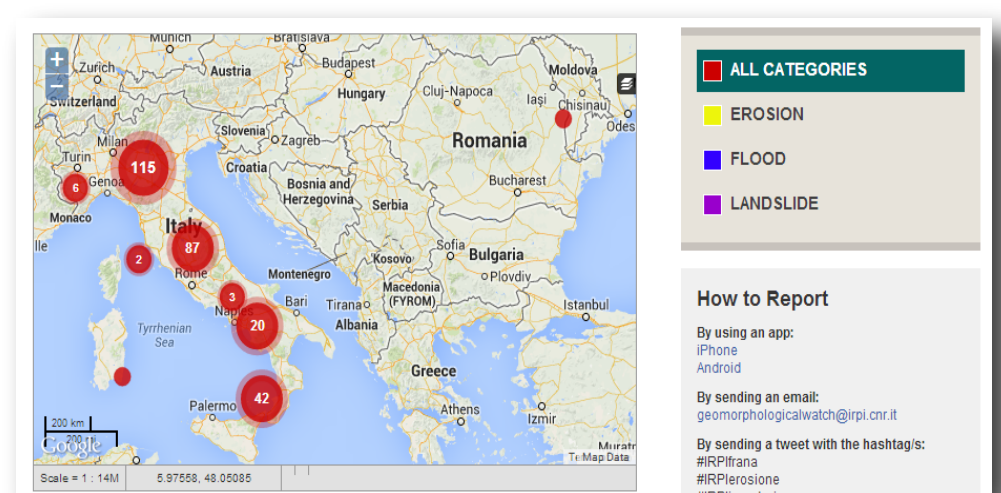
FANS OF THE PAGE

The CNR IRPI official facebook page has been active since June 2013. Currently, the page has 291 fans. The curve in Figure 1 shows the cumulative number of fans (obtained without promotions with fee) in the period chosen for the analysis (October 1 - April 16). A strong increase in the popularity of this page was recorded in the weeks between January 12 and February 4. In Italy, during this period, many events related to landslide risk occurred. The most notable were (a) the derailment of a train due to a landslide in Liguria (313 views) (b) a spectacular rockfall in Trentino South Tyrol (251 views), and (c) a flood in Sicily (153 views).
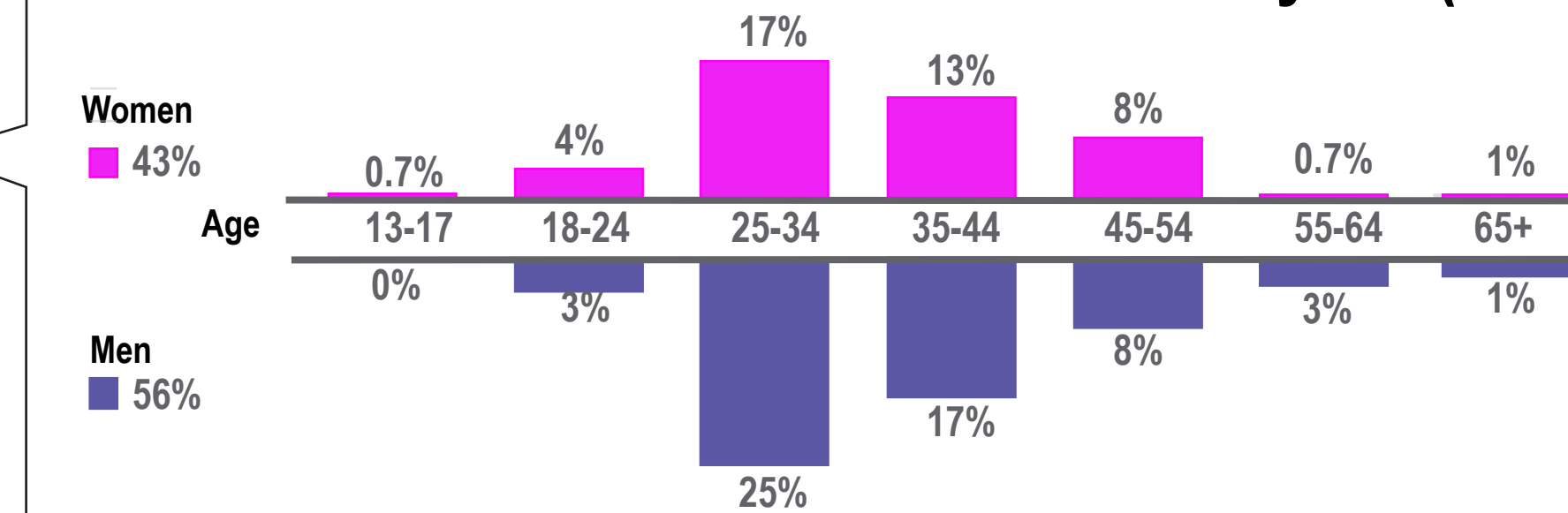

Figure 1. Number of "I Like" to the page.

Figure 2 shows the fans of the page divided by gender and age. The division by gender was fairly balanced in all age groups. The majority of the fans are in the 25 to 34 years old age group. About 30% of the fans are users with technical training. 87% of the fans are italian.
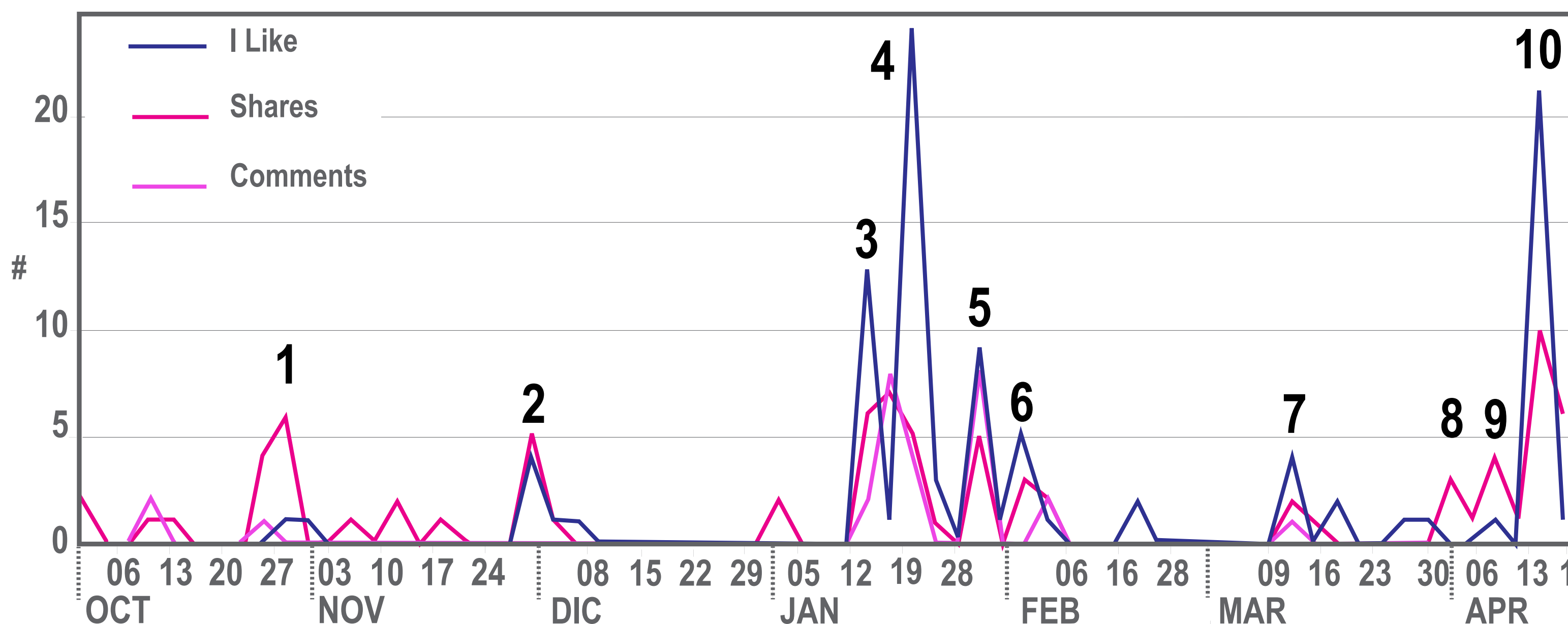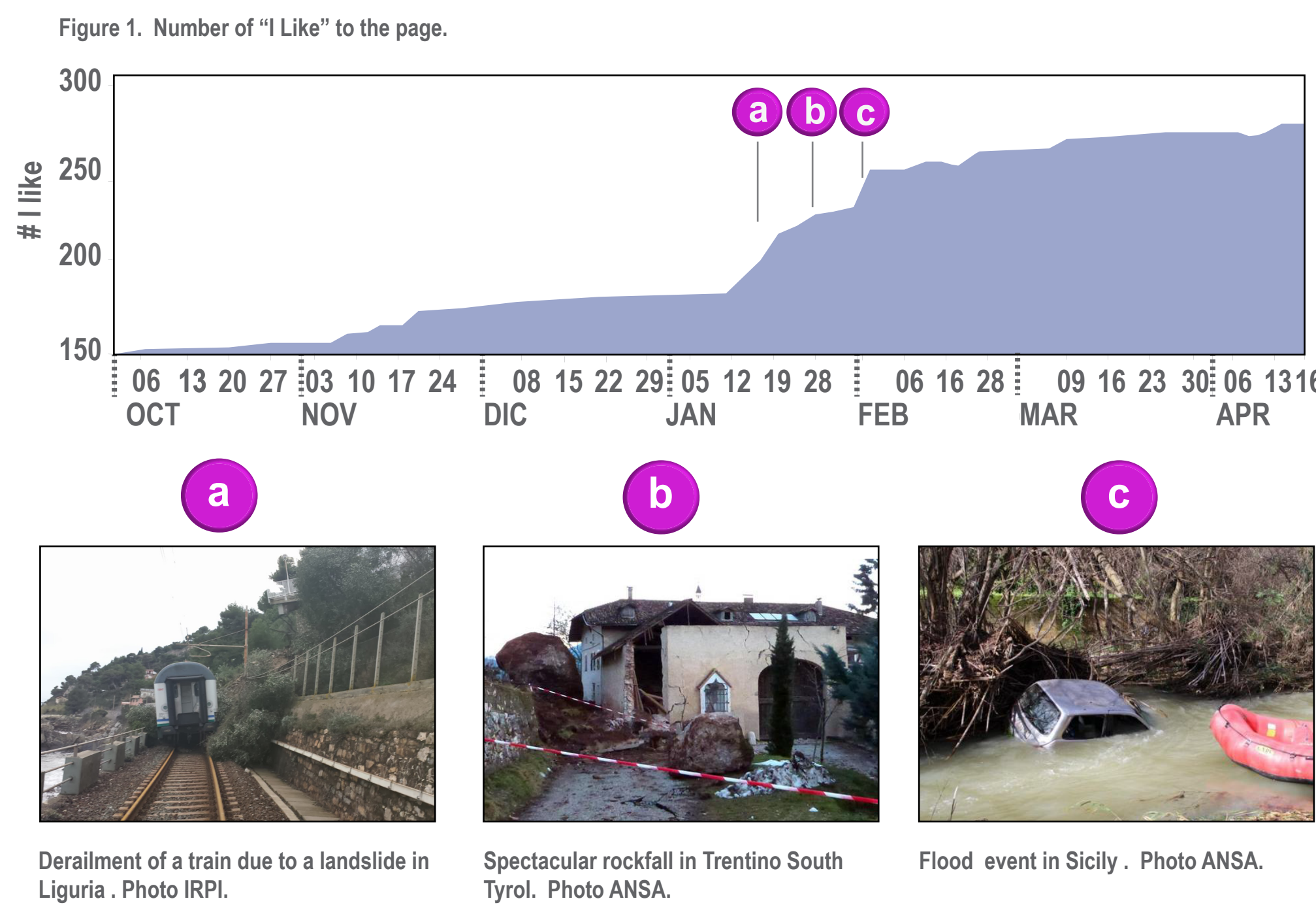

	13-17	18-24	25-34	35-44	45-54	55-64	65+
Women 43%	0.7%	4%	17%	13%	8%	0.7%	1%
Men 56%	0%	3%	25%	17%	8%	3%	1%

Derailment of a train due to a landslide in Liguria . Photo IRPI.

Spectacular rockfall in Trentino South Tyrol. Photo ANSA.

Flood event in Sicily . Photo ANSA.

THE 10 POSTS WITH MOST LIKES AND SHARES

Figure 3 shows the "I like" and "shares" given to the posts. Posts that received most interest are related to current events. The most successful kind of posts are the ones containing photos and videos (Figure 4 and Table 1) .The most successful posts are those shared through other media such as TV and newspapers. Links with educational and dissemination content attracted moderate interest. Considerable success and curiosity was achieved by videos showing the use of UAVs (i.e. drones) for landslides monitoring.

Figure 3. Trend of "I like", shares, and comment of the posts

Type		Avar. post reach, I like ,share
Video		463 / 124 / 14
Photo		118 / 53 / 4
Post		98 / 6 / 0
Link		69 / 5 / 1
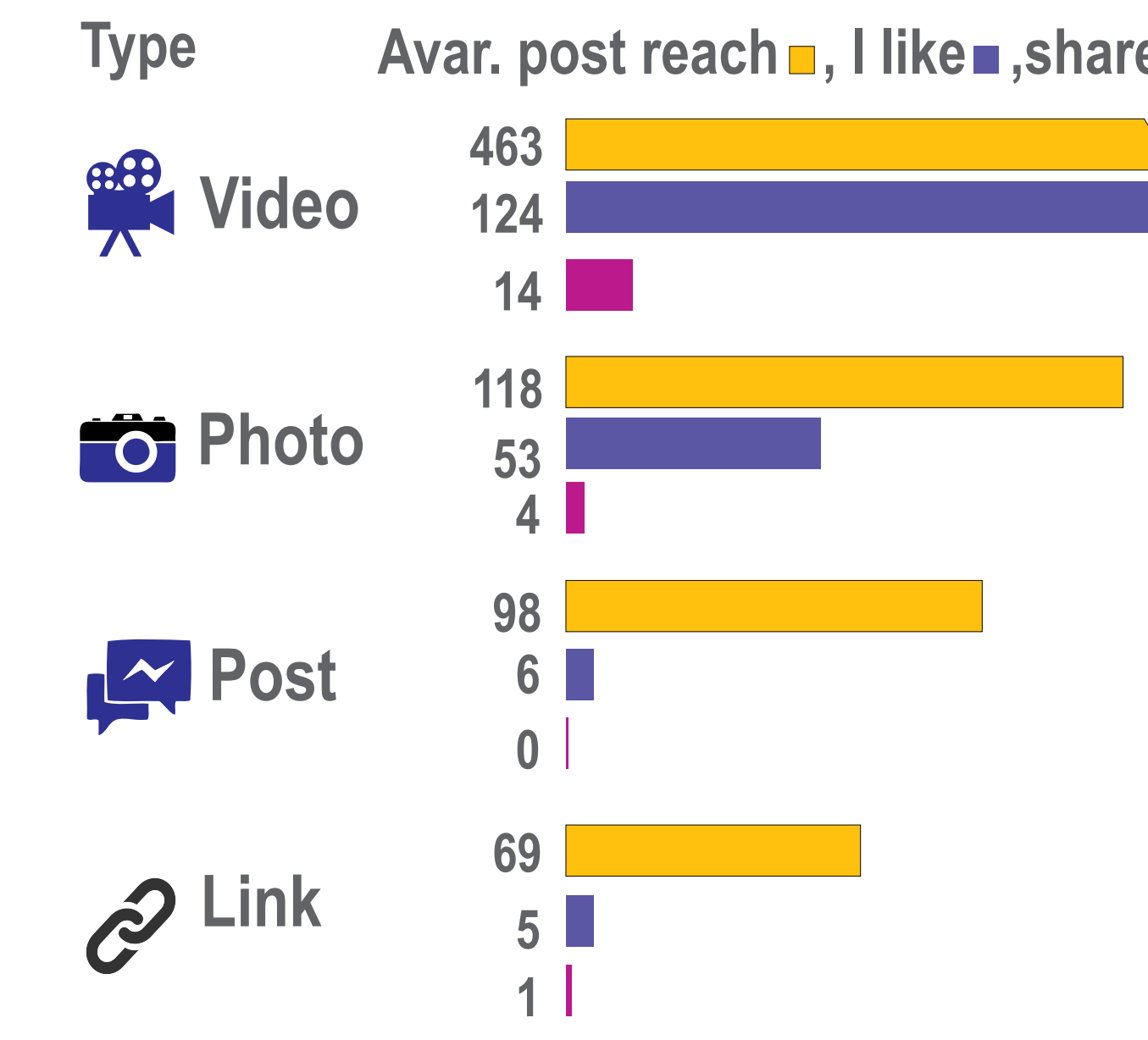
Figure 4. Engagement based on the type of post

THE TOP TEN POST WITH HIGHEST REACH

The post reach is the number of unique people who have seen the content of a post. Table 2 shows the ten post with higher reach (flow rate between 611 views and 222 views). These post are all visual media posts (video or photo). The posts that have drawn the attention and curiosity of fans or non-fans are: (i) the use of new technologies such as UAVs (978 views), (ii) landslide events of national interest that were re-launched for several days by newscasts and newspapers (930 views), and also local landslide event (824 viwes). Other posts that have hight post reach are related to educational events (588 views). The latter have involved groups of young people, who likely "viralized" posts among their friends.

#	Post	Source	Type
1	landslide event	geom.watch	link
1	scientific communication	Newsp.	link
2	educational	News	link
2	-- --	-- --	-- --
3	rock fall video	Net	video
3	launch of Polaris	Polaris	link
4	landside in Genoa	Net	video
4	link to the website	Polaris	post
5	rockfall in Trentino	Net	photo
5	scientific paper	irpi w.s.	post

#	Post	Source	Type
6	focus on floods	Polaris	link
6	article on hydrogeological risk	Newsp.	link
7	landslide video	Net	video
7	rock fall	Net	photo
8	scientific paper	irpi w.s.	link
8	UAV experimentation	Net	video
9	dissemination event	irpi w.s.	link
9	dissemination event	Net	photo
10	UAV experimentation	Facebook	video
10	La sax landslide	Net	video

Table 1 . Content, type and source of the posts with the most likes and shares (figure 3).

Post	Post Reach
original video of a UAV	611
local landslide event	602
anniversary of a severe landslide event	502
video of a UAV	367
national landslide event	348
national landslide event	313
educational event	312
educational event	276
national landslide event	262
local landslide event	222

Table 2. Ten posts with highest reach

CONCLUSIONS

Page Insights are useful to understand how people are engaging with the posts of the page. The analysis of the insights indicates which posts resonate with the audience of the page, and can be used to optimize how to reach more people. The analysis of the facebook page over the last six months shows that greater involvement of users occurred in the periods when significant landslide and flood events occurred in Italy. The public is interested in news supported by videos and photos. The flow of I like to the page shows a decline of attention or interest when events do not occur.