1. EXECUTIVE SUMMARY

More than 80 experts took part in the event representing 14 Member States, European Commission DGs and services (SECGEN, BEPA, CLIMA, ECHO, ENTR, JRC and RTD) and international organisations (UN, OECD, World Bank, WHO, WFP, Red Cross, WMO, ECMWF, Eurocontrol).

The objective has been to start a process to bridge the gap between scientific and operational organisations from the Member States and across different disciplines for more effective disaster risk management in the future and with the aim to initiate strategic partnerships on European level. The seminar has successfully initiated this process.

The seminar highlighted:

- The necessity to move disaster risk reduction further up the political agenda.
- The need for a rebalance in disaster management, namely moving from what has been predominantly an early warning focus towards a more holistic and integrated approach encompassing notably more emphasis on disaster risk reduction and prevention.
- The need to translate scientific information into actionable and usable information integrated in services and products for the different disaster management user communities including the public.
- The need to assess the increase of natural disasters due to climate change, and evaluate what it means for disaster risk management as contribution to adaptation to climate change.
- The need for more coherent and integrated multidisciplinary approach through partnership across scientific and socio-economic disciplines operating in disaster management.
- Different partnerships, from the local to national and international levels, already address some of the gaps and challenges in disaster management. However none of these partnerships is sufficiently comprehensive, and interdisciplinary at the European scale.

The seminar recommended:

- To explore the value of a Partnership at European level. The main goals of such a Partnership would be to provide a platform for integrated and coherent multi-disciplinary information and advice on a European scale. A working group could be created to discuss the potential value and feasibility of such a European
level partnerships; its goals, structure and mandate. The European Commission could take the lead to create such a working group.

- To provide guidance to support Disaster Risk Reduction activities within Horizon 2020. A small team could be set up to prepare a list of priority collaborative research topics to be submitted for inclusion in an early call within Horizon 2020 on multi-hazards, impacts and communication.

2. BACKGROUND

The key challenge for science-based decision making in disaster management is to bridge the knowledge gap between available real-time scientific analysis supporting early warning and actions triggering early response. In many countries, this knowledge is fragmented among different scientific and technical communities (meteorology, hydrology, geophysical, GIS). Moreover, the approaches utilising this knowledge are diverse and would be more effective with improved coordination across operational agencies (national disaster management centres, civil protection, public health, transport, economy, and security), across-borders. The UK Met Office and the European Commission’s in-house science service, the Joint Research Centre (JRC), are addressing these issues through, respectively, the recent Natural Hazard Partnership of 15 public sector agencies and the JRC’s support to European Commission services.

The JRC and the UK Met Office organized the seminar to map the state of the art in science-based integrated disaster management in the EU Member States and International Organisations. The aim of the seminar was to start a process to bridge the distance between scientific and operational organisations from the Member States and across different disciplines through building sustainable partnerships to move forward from response to early action and prevention. As a short-term outcome, the seminar identified a small number of targeted areas where feasible partnerships for sharing knowledge and experiences will benefit national and European level services with positive impacts for the communities at risk.

In order to keep it focused, the seminar only considered a limited number of sudden onset disaster types in Europe namely riverine floods, coastal inundation and wind storms. The seminar focused on the immediate preparedness (early warning) and response phases of the disaster cycle. The seminar also very briefly addressed how disaster management can concretely advance climate change adaptation and what parts of the EU experience can be applied elsewhere in the world.

3. AGENDA

The seminar was held from 7 to 8 November 2012. The programme was structured in thematic panels, followed by a round table discussion.

- Opening session
- Panel Session 1: State of the art
  - A. Early detection, forecasting and warning
  - B. Socio-economic impact modelling
  - C. Early action and response
- Panel Session 2: Challenges in the 21st century (first part)
  - A. Changing context
  - B. Specific gaps
- Panel Session 3: Partnerships and policy
4. SUMMARY OF THE SEMINAR TALKS

4.1. Opening session

David Wilkinson (Director, Scientific Policy and Stakeholders Relations, Joint Research Centre, European Commission) opened the seminar, highlighting the importance and timeliness of this initiative. Florika Fink-Hooijer (Director, Strategy, Policy and International Co-operation, Directorate General for Humanitarian Aid and Civil Protection, European Commission) illustrated the need to close gaps between science and decision makers with the ultimate goal to create resilient societies. She emphasised the need for a comprehensive, integrated and holistic, approach focusing more on prevention as well as response and recovery. She also stressed that science must approach decision makers to understand the needs, while policy makers must focus on cross-sectorial disaster policies. A key challenge is not the availability of scientific information, but the filtering and translating of what is available. While science needs to provide robust solutions to avoid or minimise false alerts, decision makers also have to be aware of and respect the limits of science and process understanding and prediction. Solving this gap is essential for the Commission’s goal of developing the European Emergency Response Centre, which will shift from monitoring to a pro-active role with better analytical capacity. Phil Evans (Director, Government Services, UK Met Office) focused on two issues: the delivery of relevant services. In the context of more frequent, more costly and more complex disasters, the challenges lie not so much in the scientific area (which are understood by the scientific community ) but rather in the delivery of services and information in a robust and reliable way, relevant to responders. Humberto Delgado Rosa (Director, Mainstreaming, Adaptation and Low Carbon Technology, Directorate General for Climate Action, European Commission) said the disasters are high up on the political agenda, and although climate change is regaining importance it should appear higher up on the political agenda. For climate change, both mitigation and adaption measures are necessary. The link between the climate change community and the disaster risk reduction community must be reinforced. It is essential to rely on evidence and facts through for example systematically recording disaster loss data. Panel Session 1: State of the art (7 Nov 2012, 14:00-17:30)

4.1.1. A. Early detection, forecasting and warning

This session presented examples of current state of the art systems for early detection, forecasting and warning systems of different natural disasters in Europe.

Effective disaster management requires a good understanding of the hazards as well as associated risks and vulnerabilities, appropriate monitoring tools that are sufficiently detailed to capture the spatio-temporal characteristics of the events, forecasting systems capable of providing sufficient warning time to take preparatory actions on different administrative levels, and finally an
accepted strategy for the dissemination and communication of results to different end users.

The Discussion was focused on cross-cutting issues between different scientific fields and topics, gap analysis, how to ensure injection of scientific research into operations, the benefit of interdisciplinary networks to foster comprehensive and innovative solutions.

- **Moderator:** Paul Davies, Chair of the Natural Hazards Partnership, UK Met Office

- **Challenges for science supporting risk management** David Kerridge, Director of Geoscience Research, British Geological Survey. The principle concept of moving from hazard to risk science was illustrated with different examples including volcano eruptions and space weather. The challenges can be summarized in three words: observations, modelling and translation. Amongst other findings, the importance of good observational data as well as its sustained monitoring in order to support decision makers appropriately was highlighted. Making sense of observations requires modelling, where different models need to be integrated including “non-scientific” models on vulnerability and exposure. Therefore, it is important that scientific partnerships include social sciences also. Finally, the 1.5 year experience of the Natural Hazard Partnership showed that translation of scientific data into advice, services and product development is essential.

- **State of the art in short range weather forecasting and warning operations** Hans Joachim Koppert, Deutscher Wetterdienst, Member of the Executive Board of Directors and Head of Business Area Weather Forecasting Services. The practices of the German Weather Service to forecast and detect events on different temporal and spatial scales was presented including early warning, short range and detection. In essence, the predictability of an event determines largely the design of the warning. The need for EU/global data collection and exchange of information across institutions was highlighted. The increasing importance of probabilistic forecasting also in short-range forecasts requires a sound measure and quantification of uncertainty and their communication to end-users.

- **From science to operational use: experience from continental flood forecasting and detection systems for crisis management and response** Jutta Thielen del Pozo and Tom de Groeve, Scientific Officers, Joint Research Centre, European Commission. The role of global and continental early warning and detection systems as an important contribution to international crisis and aid management have been shown for floods. The importance of appropriate networks including scientists and end users was highlighted. Gaps in communication and cross-disciplinary understanding was discussed as well as the subsidiarity and solidarity from international to local scale. **Discussion:** The discussion revolved around the evolution of vulnerability and exposure, e.g. through crisis, and how to incorporate this into risk assessment. It was pointed out, that up to date, or even real-time, information as well as projections of
future vulnerability are also important for planning and prevention strategies.

4.1.2. B. Socio-economic impact modelling

This session addresses the state of the art in socio-economic impact modelling of natural hazards. While monitoring and forecasting hazards accurately and in a timely manner is important, it does not provide answers to the impact of the hazard on the economy and society. Private and public decision makers in all sectors must be able to set up a needs-based response to minimize impact on assets and population and to enhance resilience to future disasters. Effective impact modelling combines knowledge of the hazard with the assets or population at risk and their vulnerability and resilience to hazards. This needs to be done on local scale, but also for society as a whole.

The Discussion was focused on inter-disciplinary approaches to socio-economic impact modelling, gaps in data availability, gaps in modelling capacity, and ways forward towards solutions.

- **Moderator:** Daniel Kull, Senior Disaster Risk Management Specialist, World Bank Global Facility for Disaster Reduction and Recovery (GFDRR)

- **Assessing and modelling the economic impacts of disasters** Reinhard Mechler, Head of the Research Group on Disasters and Development, International Institute for Applied Systems Analysis

- **Flood footprints based on satellite data - an example of collaboration between the Space industry and insurance industry** Fiona Shaw, Executive Director, Global Analytics, Willis Group. Satellite data has the advantage of consistent and global coverage allowing to monitor also local events around the globe. Insurance companies have been identified as a potential user earth observation data. Floods are one of the main priorities for insurance companies and flood footprints emerged as an interesting product for the insurance companies. Cost of purchasing and the information where data are held was mentioned as constraining factors in the use of these data. Willis has collaborated with ESA, Vista GmbH, Sertit and insurance industry colleagues including Swiss Re to set up a service for insurance companies based on multiple satellite inputs (distributed by PERILS AG, [http://www.perils.org/web/news/earth-observation.html](http://www.perils.org/web/news/earth-observation.html)).

- **The Hyogo Framework for Action (HFA): Socio-economic gains in investing in prevention**, Paola Albrito, Head of UNISDR Office Europe, United Nations International Strategy for Disaster Reduction. In spite of increasing economic losses due to disasters, the challenge remains to move disaster risk reduction higher up the political agenda. Developing countries typically have low investment in prevention measures and their implementation. Disaster risk reduction investments must be on ‘no regret’ basis and cost-effective in the short-, medium and long term. Joint Public-Private partnerships are an effective mean to ensure business continuity and thus increase resilience. Although the exposure to hazard will increase in cities in the future, this does not necessarily lead to
increased vulnerability. In this context, social sciences are important for understanding behaviours which is needed for measures and warnings to be effective. The UK Peer Review is a case of application of HFA principles.

4.1.3. C. Early action and response

This session addresses the challenges and needs of early action and early response to natural disasters: from local and national to international. Effective early action and early response relies on various types of information and cooperation amongst a range of actors. Advances in science and technology allows us to have access today to a range of early warnings at different time scales, which is helping to improve the actions and responses that are taken at local, national and international levels.

The discussion addressed the interfaces between warnings, at different timescales, and early action/early response interventions at different levels from local and national to international. It will also address the communication (community, local, national, international) and capacity needs for effective early action and early response.

- **Moderator:** Maarten Van Aalst, Director of the Red Cross/Red Crescent Climate Centre. Maarten gave an introduction to the session by illustrating the difficulty of decision makers to use probabilistic information. Often the (real or political) costs of wasting resources for preparing for a disaster that doesn’t happen seem too high, resulting in inaction. The Red Cross has developed training courses for decision makers that have proven success in improving dealing with probabilities.

- **Early action and response: Local level**, Alix Roumagnac, President, PREDICT Services. PREDICT provides flood risk management solutions for local communities and companies combining hydrometeorology, telecommunications, space imagery and expertise in risk management. The necessity of integrated risk management from before (understanding the risk) – during (analysis of the situation) – and after the event (lessons learned) was illustrated.

- **Early action and response: National level**, Fabrizio Curcio, Italian Civil Protection. The Civil Protection in Italy is a public service disciplined by a strong legal basis which distinguishes hazardous events by the level of system’s involvement in the response coordination (national/regional/local civil protection authorities) as well as by the interventions needed to cope with the on-going situation. Whatever is the level of coordination and the uncertainty of forecasts, at the end decisions need to be made and actions taken. Therefore the question of responsibility becomes crucial and more and more complex, as more sectors/authorities are being involved in the decision making process (e.g. scientists providing probabilities). This should be one of the main objectives of future efforts: to work at European level on the clarification of the responsibility profiles and in the proper design of European guidelines and tools, so as to allow all the needed sectors/authorities to deal with probabilities -in the decision making process- with a fully aware, responsible and serene approach.
Early action and response: An EU perspective. Peter Billing, Deputy Head of Emergency Response Unit, Directorate General for Humanitarian Aid and Civil Protection, European Commission. Peter highlighted that early warning systems are important elements in disaster management systems since they link the pre-disaster phase to the response phase. The main challenges are: (1) scientific improvements (faster and better warnings), (2) translation of scientific data into operational requirements and (3) political improvements: reaching decision makers, investing in prevention and preparedness. Overall, efforts need to be made to reduce the delays from detection of an event to alerting the population. New legislation is proposed to reinforce the EC contribution to the development of detection and early warning and alert systems for disasters (Articles 7 and 21).

Discussion: Bridging the gap between science and early action decision making needs to address is about the delivery of relevant services. (RELEVANT) Scientific early warning information must be translated into actionable advice, complementary to or integrated with advice from other organizations to avoid information overflow. (DELIVERY) It must be delivered reliably in the correct format at the correct point in the decision making process. The session discussed several models:

- UK model: dedicated body: Scientific Advisory Group for Emergencies (SAGE)
- COM model: dedicated scientific partner: JRC
- Italian model: dedicated network of public/private partners: Centres For Surveillance of Effects (CFSEs, “Centri di Competenza”)

4.2. Panel Session 2: Challenges in the 21st century (first part, 7 Nov 2012, 17:30-18:30)

4.2.1. A. Changing context

This session addresses natural and socio-economic changes during the 21st century that will affect the risk and the management of natural disasters. They include the change in climate which is likely to lead to more frequent and intense natural disasters such as droughts, floods, heat waves, storm surges... Also socio-economic factors such as population growth and urbanization or GDP growth will change the risk to these natural hazards. Finally, society will become increasingly connected with quasi on-line access to information about the environment and its eventual threats.

Moderator: Rosario Bento Pais, Head of Unit Adaptation, Directorate General for Climate Action, European Commission

Intensity and frequency of extreme events in a changing climate, Vicky Pope, Head of Integration and Growth, UK Met Office. Not only climate is changing but also vulnerability and exposure. Climate change could increase the frequency of heavy rain events leading to more frequent
floods. The need to quantify the uncertainty and to move on to calculating and communicating probabilities in order for more balanced decision making was discussed.

- **Disaster risk reduction as climate change adaptation**, Frank Raes, Head of Climate and Risk Management, Joint Research Centre, European Commission. Today there are still large uncertainties as to where, when and to what degree climate change will have impact on people, natural resources and economies. Disaster risk reduction can be considered a climate change adaptation measure, but it needs to be evaluated if today’s DRR approaches, in particular Early Warning Systems, need adapting to cope with the expected changes in weather driven hazards and related risks. The aim of every recovery phase must be to increase the resilience of society after each disaster.

- **Challenges for Government and the value of an interdisciplinary approach**, Stuart Wainwright, Cabinet Office, Assistant Director for Health, Environment, Energy and Transport. Most emergencies these days are of a multi-faced nature. Governments require increasingly interdisciplinary expert advice to address those challenges in a rapidly changing and increasingly interconnected world, declining resources while expectations are increasing, while keeping pace with opportunities afforded by technology. The UK COBR relies on a dedicated Scientific Advisory Group for Emergencies (SAGE).

### 4.3. Panel Session 2: Challenges in the 21st century (second part, 8 Nov 2012, 09:00-10:00)

#### 4.3.1. B. Specific gaps

This session focuses on the existing gaps between research on the one hand and in-field operations and response actions on the other hand. Furthermore, the differences in communicating information to the experts, decision makers in contrast to the public via media will be addressed.

Effective disaster management requires a good understanding of the hazards as well as associated risks and vulnerabilities, appropriate monitoring tools that are sufficiently detailed to capture the spatio-temporal characteristics of the events, forecasting systems capable of providing sufficient warning time to take preparatory actions on different administrative levels, and finally an accepted strategy for the dissemination and communication of results to different end users and decision makers.

The discussion addressed cross-cutting issues between different disciplines, needs and requirements for training and lessons learned.

- **Moderator**: Peter Billing, Deputy Head of Unit 'Emergency Response', Directorate-General for Humanitarian Aid and Civil Protection, European Commission

- **Case study on floods: gaps between science and in-field operations**, Leszek Jelonek, Polish Institute of Meteorology and Water Management. Changes in flood risk management were illustrated at the
example of the Odra river basin contrasting the floods of 1997 and 2010. The complexity in flood prediction was illustrated, e.g. to predict the water levels accurately during critical events while most models predict discharges as well advances in tools for flood risk mapping and communication platforms. The challenge in flood risk management is not only about issuing correct warnings but also about understanding people’s perception of warnings and their reaction to it.

**Gaps between science and evacuation orders**

- **Gaps between science and evacuation orders**, Bruno Maestracci, Director, National Joint Emergency Centre for Crisis Management. There is multitude of pathways of information from the identification of an event to the action which are also influenced by laws and rules. Scientific tools such as early warning systems initiate a process of decision making on an administrative / political level which then results in alerting the population and taking appropriate actions. In order to do this effectively, a clear governance structure must be established, e.g. from national, regional to local level for all phases of decision making and response. In particular the following issues must be address : (1) political: define also clear responsibilities at different levels, (2) technical: there is a need for exchange of staff and practices across Europe that is actually ineffective, (3) social: A general policy for education of population in (personal) risk management at European level must be elaborate.

- **In the eye of the storm: Communicating with the public to warn and inform**, Alexander Ross, Head of Media and Corporate Communications, Environment Agency and Jason Wakeford, Chief Media Officer, Environment Agency. In the past decade the UK has faced a number of disasters including floods, droughts, fires, etc. The key objectives for incident communication are to warn and inform the public in a reliable way and to maintain resilience. This is achieved through simple messages focusing on empathy, warning and actions to be taken. It is important that agreement between the different partners and actors exist as not to pass confusing messages. Advances have been made to improve communication via the internet, e.g. for flood warning and social media. Training of the population is an important aspect to ensure that warning messages are understood.

- **Discussion**: During the discussion it was emphasized that unlike in war time, there is no Geneva Convention describing the right of citizen to be protected during crises. This leads to a variety of legal frameworks to define the mandate for civil protection authorities in Europe.

**4.4. Panel Session 3: Partnerships and policy (8 Nov 2012, 10:30-11:45)**

This session addresses the initiation of a process to bridge the distance between scientific and operational organisations from the Member States and across different disciplines.

The key challenge for science-based decision making in disaster management is to bridge the knowledge gap between available real-time scientific analysis supporting early warning and actions triggering early response. In many
countries, this knowledge is fragmented among different scientific and technical communities (meteorology, hydrology, geophysical, GIS). Moreover, the approaches utilising this knowledge are diverse and would be more effective with improved coordination across operational agencies (national disaster management centres, civil protection, public health, transport, economy, security), across-borders.

The speakers provided examples of European and international actions and scientific programmes that are helping to building sustainable partnerships to bridge the knowledge gap between scientific analysis supporting early warning triggering early action/response as well as to move forward from disaster response to early action and prevention.

The discussion explored the experiences, lessons learned and suggestions for ways forward.

- **Moderator**: Jane E. Rovins, Executive Director of Integrated Research on Disaster Risk

- **EU disaster risk management policy**, Ian Clark, Head of Unit, Policy and Implementation Frameworks, Directorate General for Humanitarian Aid and Civil Protection. Disaster risk management is a priority for the EU and now addresses the entire disaster cycle having shifted from focus on response towards a more balanced and advanced system including prevention and preparedness measures. Comprehensive risk assessment is promoted jointly with policy integration and investments to build a culture of disaster prevention. Gaps in our knowledge base needs to be improved, e.g. identify information gaps, access to (harmonised) data. EU policies are to be integrated, e.g. Climate change adaptation measures are coordinated with disaster risk management. Partnerships and cooperation with strategic partners and organisations are sought on international level.

- **World Bank support for strengthening weather and climate service delivery**, Daniel Kull, Senior Disaster Risk Management Specialist, World Bank Global Facility for Disaster Reduction and Recovery (GFDRR). The World Bank supports the meteorological services to modernize weather and climate enterprises with focus on institutional strengthening, capacity building and implementation support. In many cases a fundamental change in the business model of the meteorological services is needed to improve and maintain service delivery which requires coordinated long-term financial support. The pilot program for climate resilience aims at increasing capacity to increase climate resilience into development and increase awareness of vulnerabilities and potential impacts.

- **Natural Hazards Partnership (and health)** Virginia Murray, Health Protection Agency, Head of Extreme Events and Health Protection. The UK Natural Hazards Partnership focuses on natural hazards that disrupt the normal activities of UK communities or damage the environmental services. Its outputs include scientific advice, scientific services, e.g. daily hazard assessment and scientific product development, e.g. a hazard impact model. In order to be effective health protection services need to link up with the other strategic partners within the Natural Hazards
Partnership as it is particularly important to understand the hazard itself but also its impacts.

- **Leveraging science for the benefit of society - shaping a global collaborative effort – GEM (Global Earth Quake Model)** Nicole Keller

  The use of different approaches, tools and platforms across the world to deal with particular hazards, e.g. earthquakes, inhibits effective sharing of data and improved risk assessments. The GEM platform promotes a holistic approach by incorporating hazard, vulnerability and exposure data for effective assessment of risk and socio-economic vulnerability and resilience and fosters collaboration, sharing of data and knowledge worldwide. Tools and software are open-source, which is particularly important for the developing countries. GEM represents a combination of public and private partnerships to sustain a global collaborative efforts and accelerate exchange of information, e.g. from regional studies.

4.5. **Round Table: Conclusions and way forward (8 Nov 2012, 11:45-13:00)**

- **Moderators**: Stuart Wainwright, Cabinet Office, Assistant Director for Health, Environment, Energy and Transport and Paul Davies, Chair of the Natural Hazards Partnership, UK Met Office.

- **Round table discussants**: Maarten Van Aalst, Director of the Red Cross/Red Crescent Climate Centre; Peter Billing, Deputy Head of Emergency Response Unit, Directorate General for Humanitarian Aid and Civil Protection, European Commission and Jane E. Rovins, Executive Director of Integrated Research on Disaster Risk

- **Maarten Van Aalst**, Director of the Red Cross/Red Crescent Climate Centre, stressed again the need for research on the decision making side: how to ensure systematic actions, systematic decision making (e.g. serious games, standard operation procedures). Furthermore, it is important to measure the effectiveness of partnerships: which ones work, where and why? Such analyses may then lead to effective transfer of knowledge and practices between EU countries. Finally, communication with vulnerable groups is an important topic. This requires collaboration between natural sciences and social sciences and – in general – a holistic approach.

- **Peter Billing**, Deputy Head of Emergency Response Unit, Directorate General for Humanitarian Aid and Civil Protection, European Commission, emphasized the important role of peace-time preparedness. Risk assessment, planning and clear governance at all levels contribute to reduce disaster impact and better response and management. Emergency communication is deemed as important as the response itself. Finally, also Peter stressed the importance of an interdisciplinary approach (as used by the UK Natural Hazard Partnership and the future Commission Emergency Response Centre).

- **Jane E. Rovins**, Executive Director of Integrated Research on Disaster Risk, highlighted the importance of sharing and standardising data across disciplines to improve sciences. She also emphasised the need to move towards a prevention culture and the links of disaster risk reduction to
sustainable development. Initiatives such as the Integrated Research on Disaster Risk and Future Earth are worth mentioning.

4.6. **13:00-13:15 Closing remarks**

*Maria Betti*, Director, Institute for Environment and Sustainability, Joint Research Centre, European Commission and *Phil Evans*, Director, Government Services, UK Met Office closed the seminar with the following key conclusions:

- The need for a more holistic and integrated, multi-disciplinary approach in disaster management encompassing more emphasis on disaster risk reduction and prevention and on bridging links between scientific and socio-economic disciplines.

- The potential of partnerships to address the challenges of translating scientific information into actionable and usable information integrated in services and products for a variety of users ranging from risk and response communities to the general public.

Maria Betti and Phil Evans put forward two recommendations drawn from the discussions of the seminar:

- Explore the potential of a European partnership to address the key challenges in disaster management discussed during the seminar through providing a platform for integrated and coherent multi-disciplinary advice on a European scale.

- Provide guidance to support disaster risk reduction within Horizon 2020, focusing on issues such as multi-hazards, impacts and communication.

“There is no such thing as bad weather, it's wearing the wrong clothes”