

The importance of communicating our research to non-scientific audiences



Fernando T. Maestre

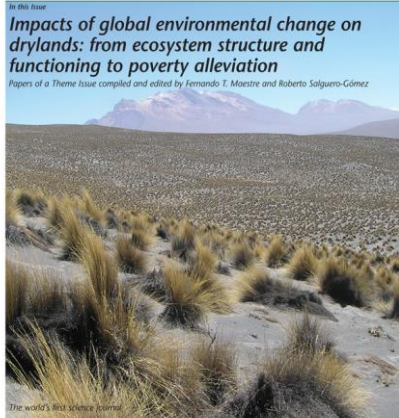
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Communicating science is a fundamental part of our job as scientists, but...

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Climate mediates the biodiversity–ecosystem stability relationship globally

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The insurance hypothesis, stating that biodiversity can increase ecosystem stability, has received wide research and political attention. Recent experiments suggest that climate change can impact how plant diversity influences ecosystem stability, but most evidence of the biodiversity–stability relationship obtained to date comes from local studies performed under a limited set of climatic conditions. Here, we investigate how climate mediates the relationships between plant (taxonomical and functional) diversity and ecosystem stability across the globe. To do so, we coupled 14 years of temporal remote sensing measurements of plant biomass with field surveys of diversity in 123 dryland ecosystems from all continents except Antarctica. Across a wide range of climatic and soil conditions, plant species pools, and locations, we were able to explain 73% of variation in ecosystem stability, measured as the ratio of the temporal mean biomass to the SD. The positive role of plant diversity on ecosystem stability was as important as that of climatic and soil factors. However, we also found a strong climate dependency of the biodiversity–ecosystem stability relationship across our global aridity gradient. Our findings suggest that the diversity of leaf traits may drive ecosystem stability at low aridity levels, whereas greater richness may have a greater stabilizing role

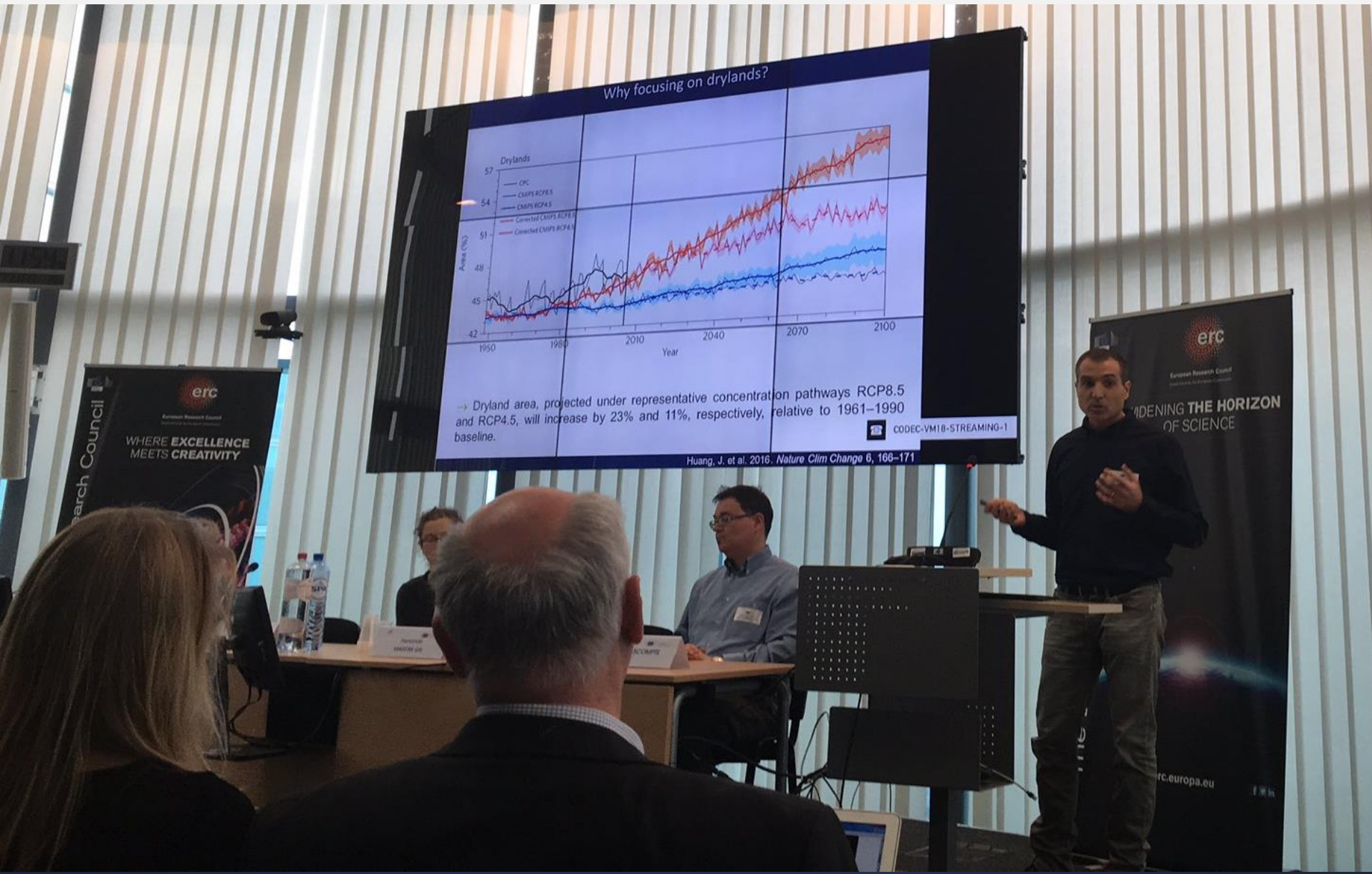
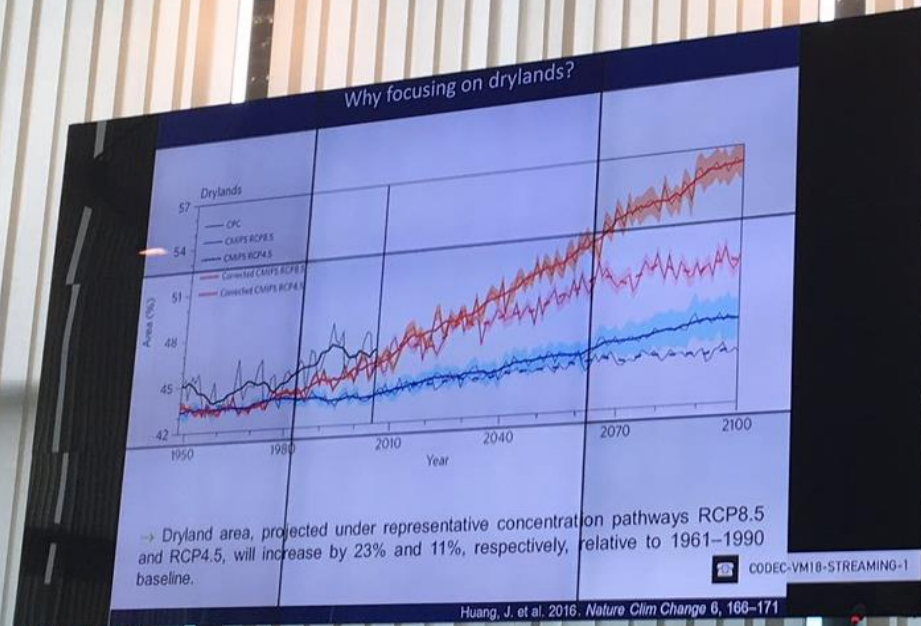
located across a wide range of climatic conditions and species pools.

Beyond species richness, the functional identity and diversity of dominant species may also influence ecosystem stability (7, 15). Dominant plant species may affect ecosystem stability if they are well adapted to environmental fluctuations in the availability of resources (7). For instance, Mediterranean vegetation is often dominated by medium-height plant species with a low growth rate and specific leaf area (SLA) that are resistant to climatic fluctuations (16, 17). The dominance of a photosynthetic pathway is also important (13), as C4 species have higher water-use efficiency than C3 species (18), and their productivity may show higher stability, particularly in water-limited systems. Alternatively, plant functional diversity (i.e., the dispersion of functional trait values within the plant community) has been shown to positively impact ecosystem stability in European forests (19) and grasslands (20) via species complementarity in resource use, and increasing functional diversity can promote ecosystem resistance to aridity in Mediterranean drylands (16). Evaluating the interplay between climatic conditions and multiple facets of plant diversity may thus shed light on the ultimate determinants

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Why we should communicate our science beyond scientific circles?



It is our obligation to our societies, which pay our salaries and research projects



→ A more informed society will be better prepared for the challenges of the future, which will largely depend on scientific advances.



BAJO MINIMOS. El fondo completamente seco del embalse de Barrios de Luna, en la comarca leonesa de Luna, en una imagen de archivo. El pasado mes de septiembre, estuvo al 5% de su capacidad por la falta de lluvias. / ALBERTO LOPEZ

situación se vuelve irreversible». Tal y como asegura Vicente Andueza, director del Centro de Investigación sobre la Desertificación de la Universidad de Valencia (CIDE), la sobreexplotación a menudo se produce en acuíferos que ya están en niveles críticos. «En zonas de Alicante, por ejemplo, se ha querido extraer tanta agua que se han salinizado. Cuando eso ocurre, ya no hay vuelta atrás. Perforaciones de un kilómetro de profundidad son una exageración. Además, hay muchísimos pozos ilegales en España. Esto es intolerable. También es importante enfocar la agricultura hacia unos cultivos adecuados a la escasez de agua. No se puede hacer de un secalar un vergel de regadíos». Por ese motivo, agrupaciones como la Asociación Española de Agricultura de Conservación. Suelos Vivos (AEACSV) trabajan en esta línea. «La agricultura de conservación es un sistema de producción agrícola sostenible, basado en tres pilares: no laboreo, mantenimiento de coberturas de suelo y rotaciones de cultivos, enumeran desde la entidad. «Dichas técnicas ofrecen ventajas tales como mitigación del cambio climático, mejora de la calidad de agua y de la estructura del suelo o aumentos de las tasas de biodiversidad».

Como corrobora Maestre, la solución pasa por «repartirnos el uso de los recursos». «De pequeño, recuerdo que siempre llegaba la época de la fresa, luego la de cereza y después la de la sandía, en función de la estación. Ahora, no estamos acostumbrando a disponer de todo en cualquier momento en el supermercado, pero tenemos que volver a un uso más racional. Además, es necesario conservar los ecosistemas y agroecosistemas en buen estado, y aumentar la restauración de aquellos que estén degradados. El futuro no va a ser como el pasado. No es tan importante gestionar pensando en lo que había hace 500 años, como en lo que habrá dentro de 150. El sur de la Península cada vez se irá pareciendo más a África, y es ahí hacia donde tenemos que mirar».

La árida amenaza que surca España

El 20% del territorio nacional ya se ha degradado. Por encima de factores como el cambio climático, la mano del hombre es, según los expertos, la principal responsable del imparable avance de la desertificación

VICTORIA GALLARDO

Cuenta la mitología griega que Cassandra, hija de Hécuba y Príamo, pactó con Apolo la concesión del don de la profecía a cambio de un encuentro carnal con él. Llegado el momento, Cassandra rechazó el amor del dios que, viéndose traicionado, la maldijo de la siguiente manera: seguiría teniendo su don, pero nadie creería jamás en sus

pronósticos. Fernando T. Maestre, director del Laboratorio de Ecología de Zonas Áridas y Cambio Global de la Universidad Rey Juan Carlos (URJC), se vale de este mito para ilustrar la impotencia de los científicos que, como él, advierten de la seria amenaza que entraña la palabra «desertificación». «Utilizando un símil bastante malo, predicamos en el desierto», lamenta. «Es difícil tener la noción de que se

desertifican las zonas áridas cuando abres el grifo y sale agua». Según apuntan los estudios más recientes, en España, el 20% del territorio ya se ha degradado. El umbral que separa este porcentaje de este otro escenario en el que el riesgo de desertificación aún es una amenaza y no una realidad es estrecho. «Factores como el cambio climático hacen que ese peligro se incremente», prosigue Maestre. «El

calentamiento global aumenta el nivel de aridez, entendida como la relación que existe entre la precipitación y la demanda evapotranspirativa de la atmósfera. Además, los ecosistemas se vuelven más vulnerables y las condiciones climáticas son menos adecuadas para el desarrollo de organismos». Así lo constata uno de sus estudios, que refleja cómo el aumento de la aridez disminuye la diversidad de ciertos

EL PAÍS

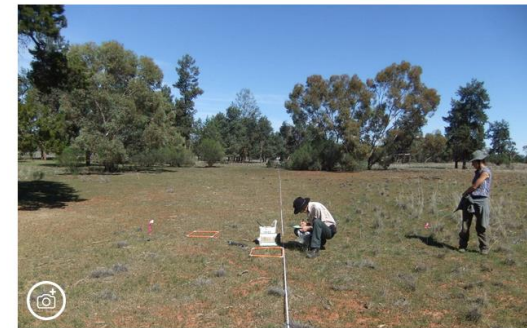
Una reducida aristocracia de bacterias domina los suelos de la Tierra

El primer atlas bacteriano muestra que el 2% de las especies sustentan las poblaciones de microorganismos del suelo



MIGUEL ÁNGEL CRIADO

24 ENE 2018 - 07:28 CET



Toma de muestras en una parcela de Nueva Gales del sur en Australia. DAVID ELDRIDGE

Apenas el 2% de las especies de bacterias conocidas dominan la mayoría de los suelos del planeta. Como sucede con los humanos y la riqueza, esta aristocracia bacteriana está presente en las terrenos más diversos, siendo la más abundante

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COMMUNITY PAGE

Crafting your scientist brand

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Abstract

That a scientist might shape and cultivate a personal brand is a relatively new concept but one that is finding increasing acceptance in this new age of rapid communications and social media. A key driver is the abrupt rise in well-funded and organized antisience movements, especially in North America and Europe, such that society now benefits from scientists with strong personal brands and public personas who are willing to engage general audiences. In this sense, branding itself can advance science, the sharing of information, and the promotion of science as a public good. Still another dimension to branding is that it affords an opportunity to mentor younger scientists and helps you to become an important role model for the next generation. There is also a practical side, as today, fewer scientists spend their entire career at a single institution, so owning a strong brand can sometimes create easier paths for transitions and mobility. However, brand cultivation ideally begins in collaboration with your institutional office of communications and is done in a way that is seen as a win for both you and your university or research institution. Described here are some steps to consider when embarking on brand cultivation and how to avoid some of the potential pitfalls.



OPEN ACCESS

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→ Communicating our research also helps to cultivate our personal brand as scientists

Is a requisite of funding agencies

RESEARCH & INNOVATION
Participant Portal H2020 Online Manual

> H2020 Online Manual > Grants > Grant management >

Keeping records | Amendments | Reports & payment requests | Deliverables

Dissemination & exploitation | **Communicating your project** | Acknowledgement of EU funding | Checks, audits, reviews & investigations

Communicating Your Project HOW TO

Communicating and promoting your project: The beneficiaries must promote the action and its results, by providing targeted information to multiple audiences (including the media and the public), in a strategic and effective manner and possibly engaging in a two-way exchange ([Article 38 of the model grant agreement](#)).

What does communication involve?

The communication activities must already be **part of the proposal** (either as a specific work package for communication or by including them in another work package). They are taken into consideration as part of the evaluation of the criterion 'impact'.

A **comprehensive communication plan** should define clear objectives (adapted to various relevant target audiences) and set out a description and timing for each activity.

With your communication activities you call attention of multiple audiences about your research (in a way that they can be understood by non-specialists) and **address the public policy perspective** of EU research and innovation funding, by considering aspects such as:

- transnational cooperation in a European consortium (i.e. how working together has allowed to achieve more than otherwise possible)
- scientific excellence
- contributing to competitiveness and to solving societal challenges (eg. impact on everyday lives, better use of results and spill-over to policy-makers, industry and the scientific community).

Good communication

- starts at the outset of the action and continues throughout its entire lifetime**
- is strategically planned** and not just be ad-hoc efforts
- identifies and sets clear communication **objectives** (e.g. *have final and intermediate communication aims been specified? What impact is intended? What reaction or change is expected from the target audience?*)
- is targeted and adapted to **audiences** that go **beyond the project's own community** including the media and the public
- chooses **pertinent messages** (e.g. *How does the action's work relate to our everyday lives? Why does the target audience need to know about the action?*)
- uses the right medium and means** (e.g. *working at the right level - local, regional, national, EU-wide? - using*

→ Having a communication plan is increasingly valued by public and private funders and is a key part of many calls.

Do we need more reasons?



→ Communicating our science is a very rewarding activity that allow us moving beyond our “comfort zone”, improve our communciation skills and learn a lot!

Ten simple rules to start disseminating scientific results among non-scientific audiences

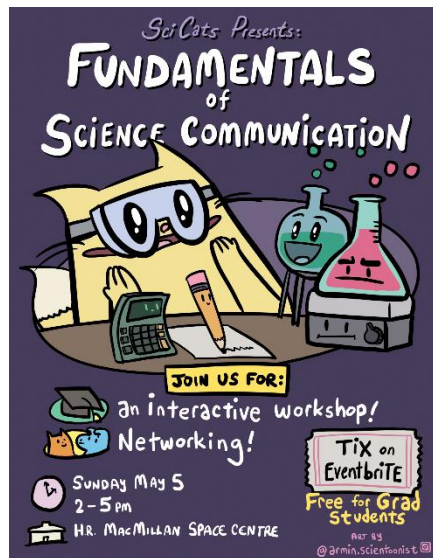


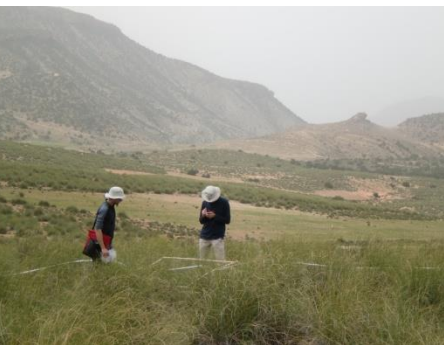
Advice for effective communication

1. Define your target audience and adjust your language to it
2. Use the medium that better can convey the message you want to give
3. When using social media, always be polite and constructive
4. If you don't have a Twitter profile, get one!
5. Don't use social media only to show your successes. Your audience want to get something else from your posts (facts, entertainment, inspiration...)
6. Don't try to cover too much and focus on those tools/social media you like the most (and can manage!)
7. Give priority to visual information when communicating your research

Advice for effective communication

8. Use the virtues of and create content tailored to each platform
9. When disseminating research results give a clear and simple “take-home message”
10. Learn! There are tons of resources, meetings and support to become an effective communicator to non-scientific audiences





Vielen Dank!



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INSTITUTO MULTIDISCIPLINAR
 PARA EL ESTUDIO DEL MEDIO
Ramon Margalef

