

13 October 2023

Dear Search Committee:

Dr Matteo Convertino has asked me to provide you with a letter of reference on his behalf, in support of his application for a Fellow position in your program (Future Earth Coasts). I am delighted to do so, as I believe he is an exceptionally gifted scholar, fully deserving your most serious consideration.

I have known Dr Convertino for many years (beginning around 2009) — as both a colleague (when he worked as a senior researcher for the Department of the Army's premier research laboratory, the U.S. Army Engineer Research and Development Center, U.S. Army Corps of Engineers) and, subsequently, as a research collaborator and co-author during his positions at the University of Minnesota, Hokkaido University, and currently at Tsinghua University; during this time period, I have consistently been impressed with his intelligence, his passion for science & technology (with core interest for ecosystem synthesis and design), and his overall professionalism and work ethic.

You will note from his CV that Dr Convertino's intellectual portfolio is impressive in its overall breadth, depth, and scope of vision. Personally, I am most familiar with his work in the areas of climate change, portfolio analytics, and resilience in relation to ecosystems. The work on climate change he has done (in collaboration with me and others) is at the forefront of current scientific research programs that are situated at the intersection of regional assessments of climate change and multi-attributed assessments of climate-related impacts (including complex ecological modeling); this body of work is well-cited, and has found application in areas as diverse as agriculture planning, natural resources management and public health. His work on portfolio analytics is characterized by its methodological importance, as well as its practical relevance and utility. Methodologically, this work seeks to marry congruent optimization capabilities and techniques (focused, typically, on problem domains that are NP-hard in the static case) with complex approaches to outcome valuation. Not surprisingly, this work has applicability across a broad range of

domains, where systemic risk and uncertainty are pervasive, and where combinatoric search and valuation are made difficult by the existence of networked dependencies and complex/ill-defined preference and value functions. Also worth noting is Dr Convertino's work on complex modeling in public health and medical domains — including recent work on nature inspired fractal bio-sensor technology for monitoring ecosystems — where he and his colleagues are developing novel theories and open-source computational technologies by merging models in information, network, and decision sciences, with a view towards understanding and controlling complex systems. In recent years, he and I have done interesting work in the area of resilience, focusing on the theoretical foundations of prevailing resilience paradigms, as well as exploring practical applications in a range of empirical settings. In all of these areas, Dr Convertino continues to advance the state-of-the-art, and to offer novel solutions to some of the most pressing challenges of the day, in a diverse range of areas, including climate change, critical ecosystem change, and global health. His current work on multiscale impacts in coastal and marine ecosystems – from microbes up to higher trophic levels across the food chain – is scientifically groundbreaking (considering causality assessment in complex ecosystems as well as multiscale biological function) and impactful for human populations considering environmental pollution, global change drivers and socio-economic outcomes.

In terms of his scholarly output and publications, Dr Convertino is a very productive scholar, as I think his CV bears out. His output over the past several years has been extremely impressive (again, a testament to his consistently high levels of enthusiasm/motivation and his overall work ethic), and is certainly on par with the highest standards of the world's top universities and research institutions. His writing style is dense and filled with ideas; in recent years, he's made considerable progress towards developing a writing style that is characterized by its fluidity and directness, across a broad range of audiences. To be sure, he is well on his way to finding his own "voice" as a scholar — an important (though oftentimes difficult) thing to do in research environments where collaboration and co-authorship are commonplace. In this regard, it is also worth noting that Dr Convertino is very good at both initiating and following through with collaborative efforts. It is my expectation that Dr Convertino will continue to flourish in these collaborative

environments, and he will, at the same time, continue to develop large-scale programmatic efforts in areas and domains of greatest interest to him.

In this general vein, in recent years, Dr Convertino has begun to undertake the kinds of projects and tasks that usually constitute important steps in the “middle-stages” of an impactful academic career — for example, initiating and leading research projects and initiatives that look to provide important conceptual and/or empirical cornerstones for his work, and that seek to inform a larger programmatic vision for his intellectual oeuvre. Other examples along these lines include taking on increasingly prominent “editorial” responsibilities, initiating book- or monograph-length works that hold the potential for providing important theoretical foundations for subjects and application domains that interest him, as well as mentoring a cadre of young scholars who will further advance his intellectual agenda and vision. In all of these endeavors, Dr Convertino brings a palpable sense of excitement and engagement that is an inspiration to everyone he comes in contact with.

On this personal level, it is worth noting that Dr Convertino possesses several qualities that make him particularly well-suited to the role for which he is applying. First, Dr Convertino brings a holistic, trans-disciplinary perspective to almost everything he does as a researcher and a scholar. I have personally observed that his approach to collaborative efforts is both open and engaging; he listens well and lets others have their say; he is consensus oriented, and is happy to play “his part” in large-scale, multifaceted efforts. And while he is not shy of the “spotlight”, he does not seek it for its own sake, nor wallow in dejection and/or self-pity when it is not on him. He is confident in both his abilities and his place in the world — which, in turn, enables him to bring a level of poise and maturity that one typically finds only in more senior colleagues. Finally, I have always sensed in Dr Convertino a desire to make the world a better place; as hackneyed as comments like this can sometimes sound, I believe it to be an accurate reflection of his true motivations and intentions. His ability to influence and impact the world around him stems, fundamentally, from a firm belief in the power and usefulness of rationality (in all its guises), and in the importance of *ideas* in confronting the most pressing challenges of the day. He really believes that.

He can change the world — and he makes *others* believe that they, too, can be

instruments for positive change in the world, by devising creative conceptual schemes, tools, and technologies that enable us see and understand the world differently, and that help human beings make the best possible choices in contexts and situations where “right answers” are rare commodities. To my mind, these personal traits and attributes make Dr Convertino stand apart from many (if not most) of his contemporaries.

In summary, I firmly believe that Dr Convertino would be a tremendous asset to any department, faculty, and organization including your own, and I am delighted to give him my highest possible recommendation.

If I can assist you further in your faculty search efforts, please do not hesitate to call or write.

Dr. L James Valverde

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