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Surface Geochemical Exploration in Southern South America: A Decade of Success and Learned Lessons

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Hydrocarbon seepage as exploration tool has been benefited by the development of new, more accurate and precise techniques for surface exploration in the last decade. The microseepage from hydrocarbon accumulations is common and the hydrocarbon-migration pathways are often vertical or sub vertical as bibliography pointed out many years ago (i.e.: Schumacher & Abrams, 1996). More than 100.000 km^2 of oil basins have been evaluated in Argentina and South America through the use of geochemical surface exploration techniques. These techniques include mainly soil gas and microbiological analysis, either by traditional culture techniques or most modern DNA analysis. More than 200.000 samples were analyzed in mature and frontier basins either for oil and gas exploration or oilfield development (Ostera et al., 2018). The results show that the level of success for wells drilled in anomalies is in the order of 90% (productive wells). For wells drilled in background values the prediction was correct in a 100% of cases. The anomaly intensity was also correlated with production (Wainstein et al., 2018). These techniques have permitted the detection of beyond pipe production, in areas where different source rocks and reservoirs are overlapped. The use of surface exploration techniques were not limited neither source rock characteristics nor by the API gravity of oil, that has been considered restrictive in some cases. Knowledge and explanation of basic principles, careful planning of survey, proven techniques with strict quality control, cooperation between the laboratory and users, recognition of limits and pitfalls of the techniques are critical for success.

Biography:

Dr. Héctor A. Ostera has done Ph.D. in Geological Sciences, University of Buenos Aires. Associate Professor, Department of Geological Sciences, University of Buenos Aires (1998-2018); Research scientist, National Research Council (1999-2006); Vice-Director, Institute of Geochronology and Isotope Geology (INGEIS), 2001-2006; Research scientist, Environmental and Analytical Area, YPF S.A. (2006-2010): Director, DTP Laboratorios (2010-2011); R&D Manager, DTP Laboratorios S.R.L (2011-2018). He has been director and participant of numerous accredited research projects; author and co-author of more than 150 contributions in scientific magazines, congresses and symposiums and more than 100 technical reports on surface exploration geochemistry, environment and isotope geology. He has been member of the Directive Commission of the Superior Council of Geology and the Geological Association of Argentina. Secretary of the Scientific Committe, II South American Symposium on Isotope Geology (Carlos Paz 1999), XV Geological Congress (Calafate 2002), President of the Scientific Committee, VI South American Symposium on Isotope Geology (Bariloche, 2008); reviewer for scientific magazines, congresses and symposiums; evaluator of research projects for government agencies; director of PhD and M.Sc. Thesis at the Departament of Geology, University of Buenos Aires; Consulting geologist for govenment agencies and private companies. Actually, focuse his R&D on new techniques and instrumental for surface geochemical exploration, environment & isotope geology.