The crisis in geo-education in Africa was highlighted by this journal during the International Year of Planet Earth in 2008. The authors identified the paradox by which African countries were increasingly eager to exploit the continent’s rich georesources to fuel socio-economic development, even as their education systems were unable to rise to the challenge. They drew attention to the ‘yawning inequalities across the continent in terms of teaching resources and research facilities.’

This state of affairs spurred African governments to invite UNESCO to launch the Earth Science Education Initiative in Africa in 2008. To kick-start the project, UNESCO undertook a series of regional scoping workshops across Africa to assess capacities and needs in Earth science education, research and industry, and identify an appropriate role for UNESCO and its partners.

To complete this preliminary assessment, UNESCO commissioned a survey of publication trends among African Earth scientists between 2000 and 2010 which has just been published. The Journal of African Earth Sciences was chosen as the reference journal for the study. The results are edifying. They confirm the strong imbalance in geosciences, with most articles coming from just 10 African countries. This would seem to suggest that the Earth Science Education Initiative should focus on fostering geological education, research and collaboration in those countries which are not producing papers.

The scoping workshops in 2009 and 2010 pinpointed some common issues for Africa. Participants observed, for instance, that the Earth sciences were currently taught only at university level and recommended that they be incorporated in primary and secondary school curricula. In tertiary education, the main concern was how to attract more students — and above all the brightest among them — to a field suffering from a low status compared to other disciplines like biology, chemistry or physics which are present across all levels of education. Even in North Africa where there are a large number of well-organized geology departments and geological surveys, enrollment in Earth science programmes is dropping.

Participants bemoaned the inadequacy of analytical facilities in all but South Africa and called for greater interaction between universities and industry to overcome weak linkages. African geoscientists are isolated, they observed. ‘Not only are strong connections with the international research community missing,’ noted the UNESCO report on the workshops, ‘but also interactions across the continent, within regions and across countries like the Democratic Republic of Congo, are weak to non-existent.’

The report also identified striking differences on the continent, beginning with the geological environment. Among cultural differences, ‘language seems to have been a divisive factor rather than a uniting element,’ observed the report.
The workshops all came to the same conclusion, that there was an urgent need for greater networking on the continent. UNESCO has taken up this recommendation and is in the process of setting up an African Network of Earth Sciences Institutions.

UNESCO is initiating two other projects in response to the workshops. This year, it will be working with the Government of Djibouti on an experimental pilot project to introduce geology courses into schools, with plans to extend the project to other interested countries. A third activity targets young Earth science professionals; UNESCO is currently developing a mobile training course in geological field mapping, in recognition of the important role geological mapping plays in a practical Earth science education and in helping countries to identify and manage their mineral wealth better.

A relatively low proportion of African authors

The bibliometric survey commissioned by UNESCO in 2011 found that a total of 1 387 authors from 36 African countries had published in the Journal of African Earth Sciences between 2000 and 2010. Of these, 1200 (86.5%) of African authors) came from just ten countries (see figure). Geoscientists from the top four countries (Morocco, South Africa, Egypt, Cameroon) contributed more than 62% of the total, although Tunisia’s contribution did increase markedly towards 2010.

The order changed slightly when it came to the geographical coverage of research. For this indicator, Egypt topped the list, followed by Morocco, South Africa, Cameroon, Ethiopia, Tanzania, Algeria, Tunisia, Nigeria and Kenya. More than one-third of research papers concerned sites in North Africa.

There were small fluctuations in volume but, overall, the African contribution to the journal remained more or less constant between 2000 and 2010. For the purposes of the study, all authors primarily affiliated to an institution in Africa were considered to be African contributors. Allowing for authors who published more than one article in the journal, a total of 2 894 authors were counted over the study period. Of these, 48% (1 387 authors) were primarily affiliated to African institutions. This is lower than would be expected for a journal fully devoted to African Earth sciences (see figure).

Authors from European institutions made up the next biggest pool, at about 38%. North American authors represented just 7.5% of the total, with authors from Australia, Asia, the Arab States and Latin America...
The bibliometric study confirms that, in most African countries, there is a clear need to strengthen education and foster research in Earth sciences. The isolation of African scientists also needs to be broken through greater cooperation among African institutions and researchers. Be it in education or research, greater institutional networking will be a priority of the Earth Science Education Initiative.

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Read the full report: http://unesdoc.unesco.org/images/0021/002148/214888e.pdf
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9. UNESCO’s main partners in this initiative are the Geological Society of Africa, the Centre international pour la Formation et les échanges en géosciences (CIFEG), the African Association of Women in Geoscience, the Royal Museum of Central Africa and the International Union of Geological Sciences.
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