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TITLE: Atolls of the World: Revisiting the Original Checklist

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ABSTRACT:

There is only one published list of atolls of the world (Bryan, 1953) and it is the source of the often-quoted figure that there are 425 or "more than 400" of them. However, the original compendium included many banks and other reefs without lagoons. A reexamination of Bryan's data, along with charts, satellite photographs and updated literature suggests that the number of atolls is indeed "more than 400," despite the deletion of more than 100 of his entries. There are 439 atolls identified in the present summary, but the list is broadly constructed, inclusive, and not limited to those known to have formed on subsiding volcanic platforms. In addition, 171 of those listed (39%) are primarily subtidal atoll reefs with little or no island development. These particular atolls comprise 96% of those from Fiji, 94% of those in the South China Sea, and 62% of those in Indonesia. With few exceptions, all of these reef systems are specifically identified and verified using Google Earth, Landsat or other satellite imagery, making this group an important and under-appreciated element of atoll geomorphology. Eliminating atoll reefs from consideration reduces the list of atolls to 268. Of these, 104 are closed and lack a direct passage connecting the lagoon and the surrounding ocean. Closed lagoons are typical of atolls in French Polynesia (53 of 78 with lagoons), even though most of them are euhaline and are open to exchange of ocean water by indirect mechanisms. By contrast, many atolls in the central Pacific, including most of those in Tuvalu, the Phoenix Islands and the Line Islands, have developed isolated lagoons containing hypersaline, brackish, and even fresh water. The location and type of atoll (atoll reef, and atolls that are open, closed, or closed with altered lagoon salinity/oxygen) are specified on maps and tables appended to this work, and a photographic record of all but two of 439 atolls has been assembled as a supplement. This list is by no means complete. There are numerous atolls or atoll-like structures that do not have a satellite record or an adequate description on charts or in the literature. This is especially true of Indonesia, Fiji and islands east of Papua New Guinea where further exploration is likely to increase the number of entries.

SOURCE: Atoll research bulletin

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