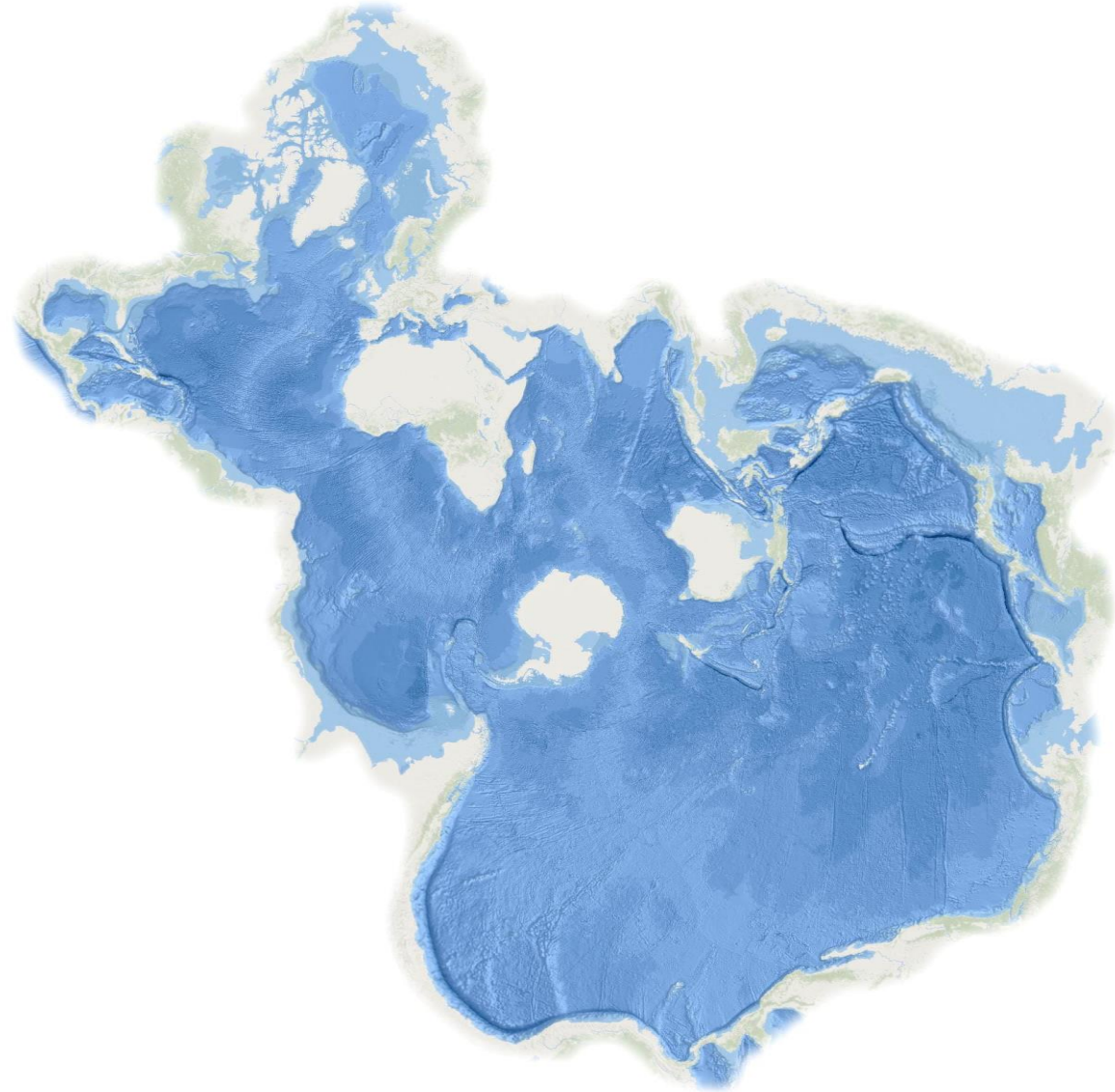


The Ocean : a global challenge and a planetary solution

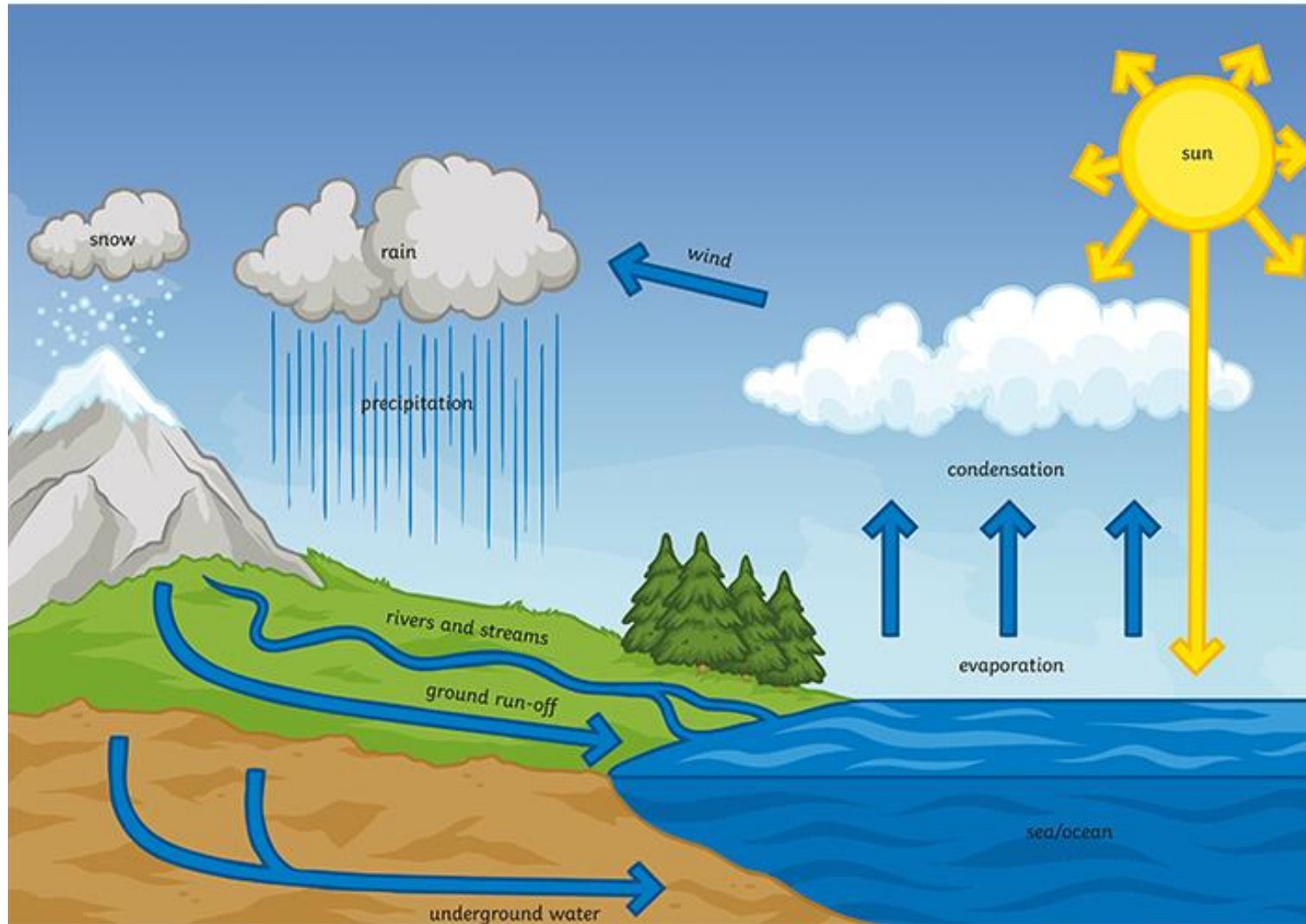
Report's digital platform

**Graphics related to the first chapter of Part I : Understanding the
Ocean Sphere**

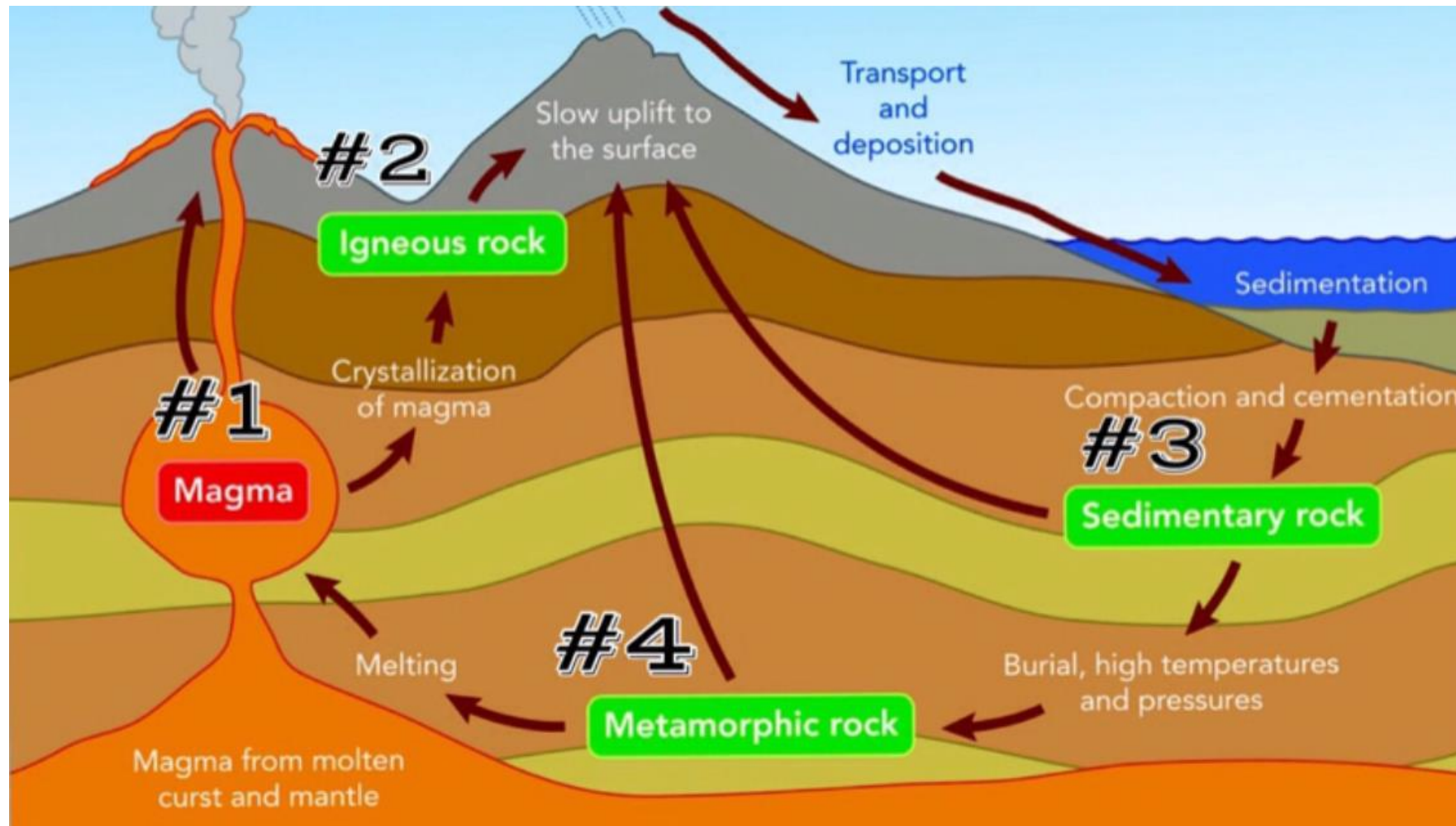
Page 22- The Spilhaus map represents the world's oceans as a single body of water. Spilhaus ArcGIS project

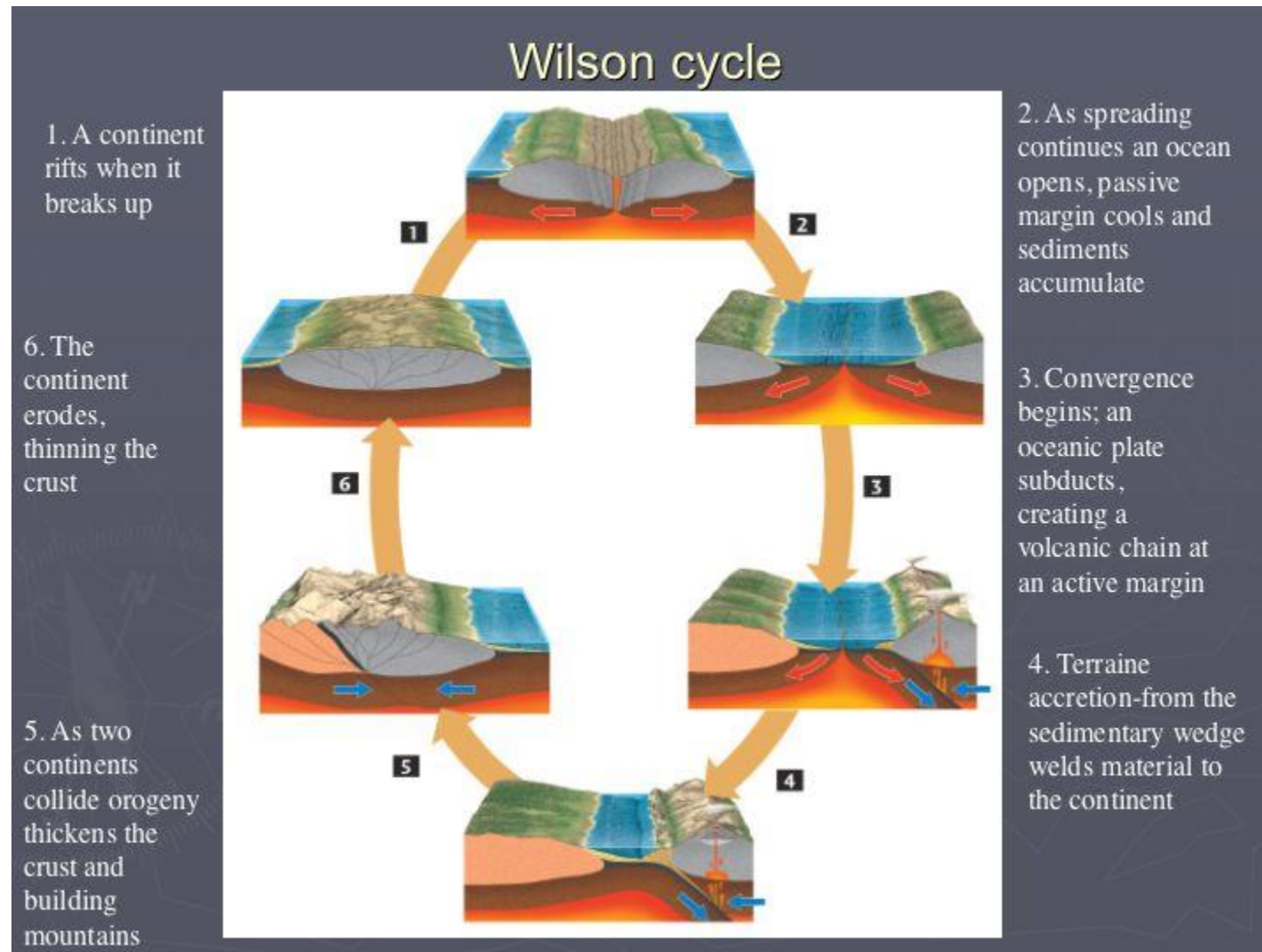


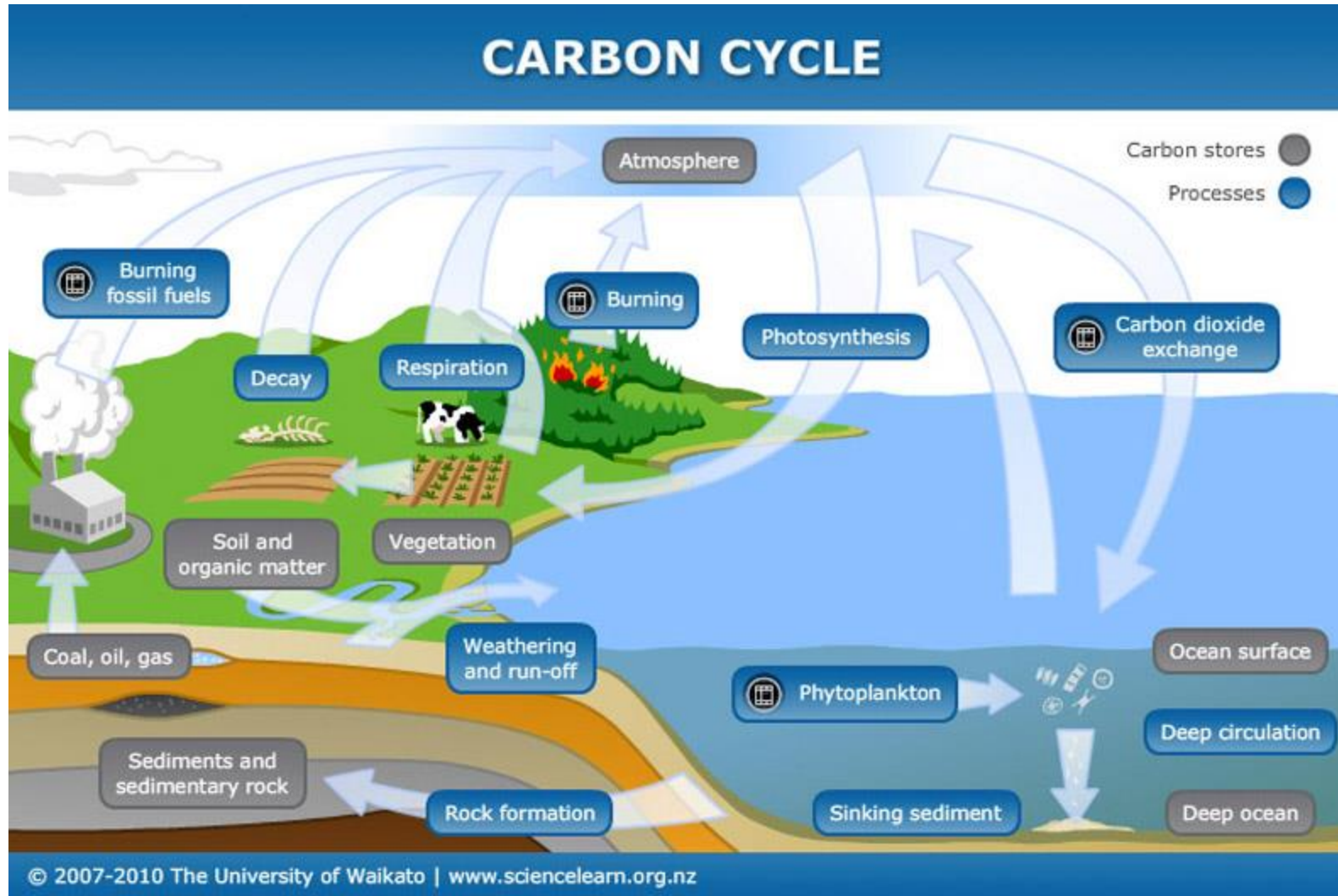
Page 24 – Water Cycle



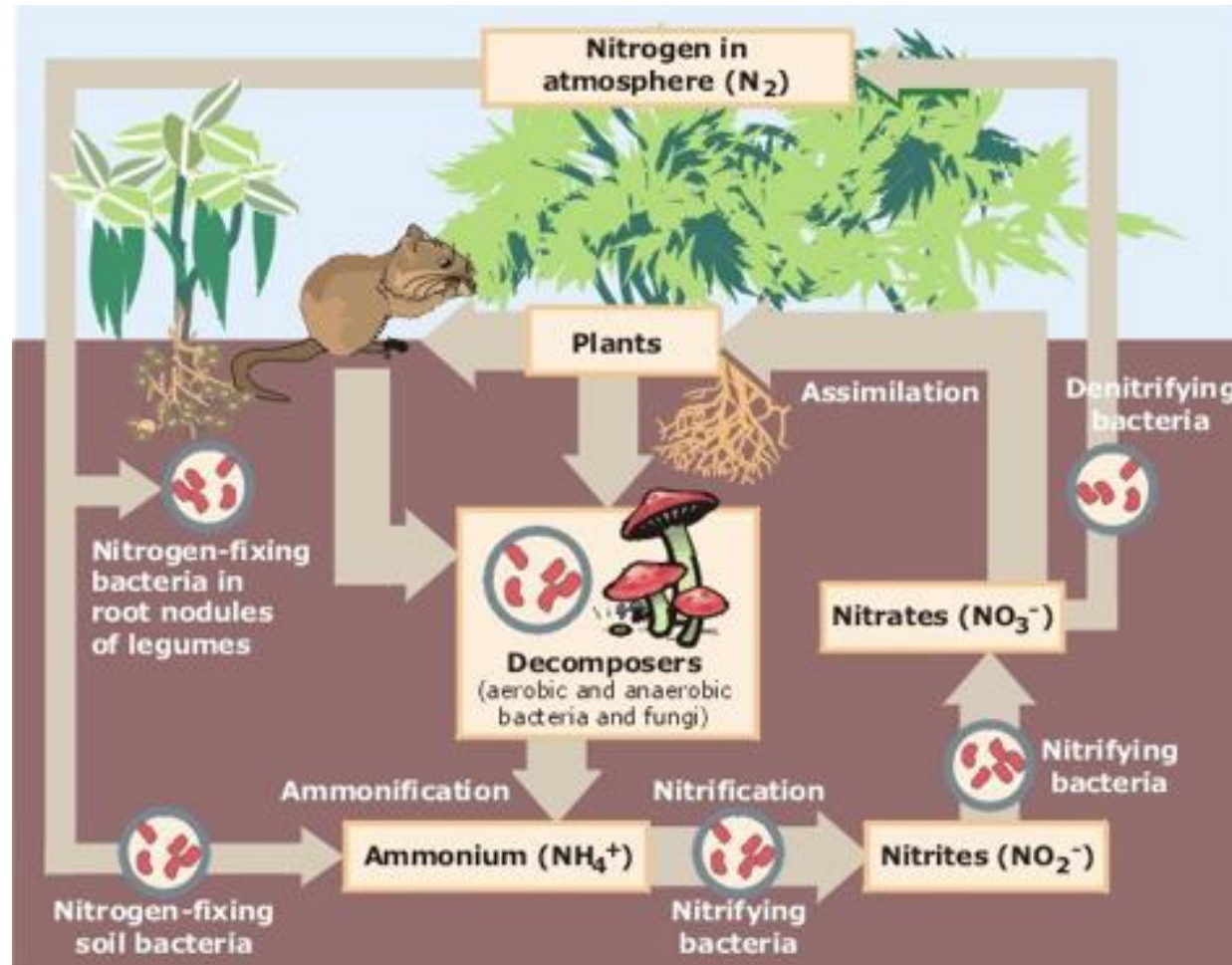
Page 24 – Geological Cycle





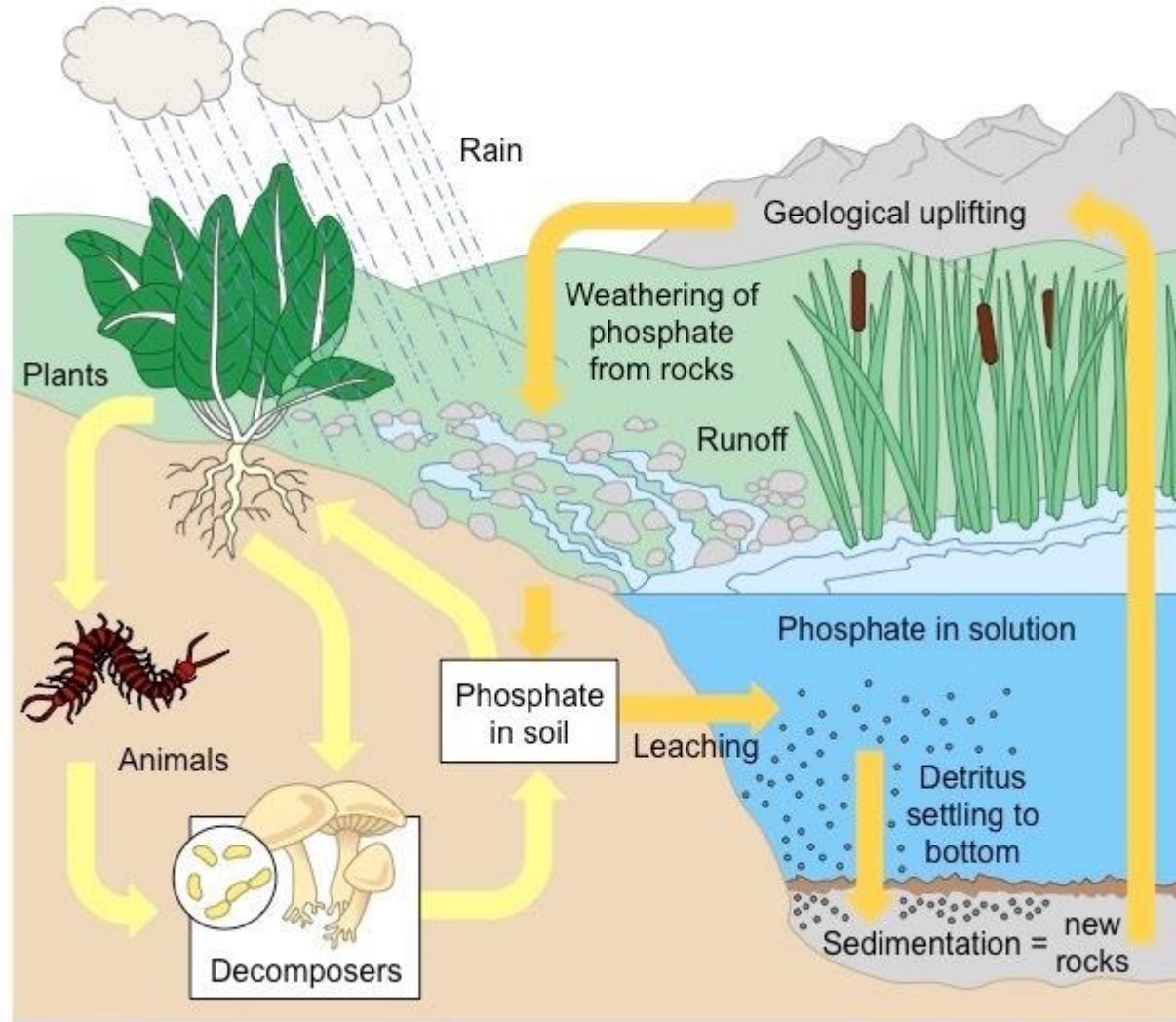


Page 25 – Nitrogen Cycle

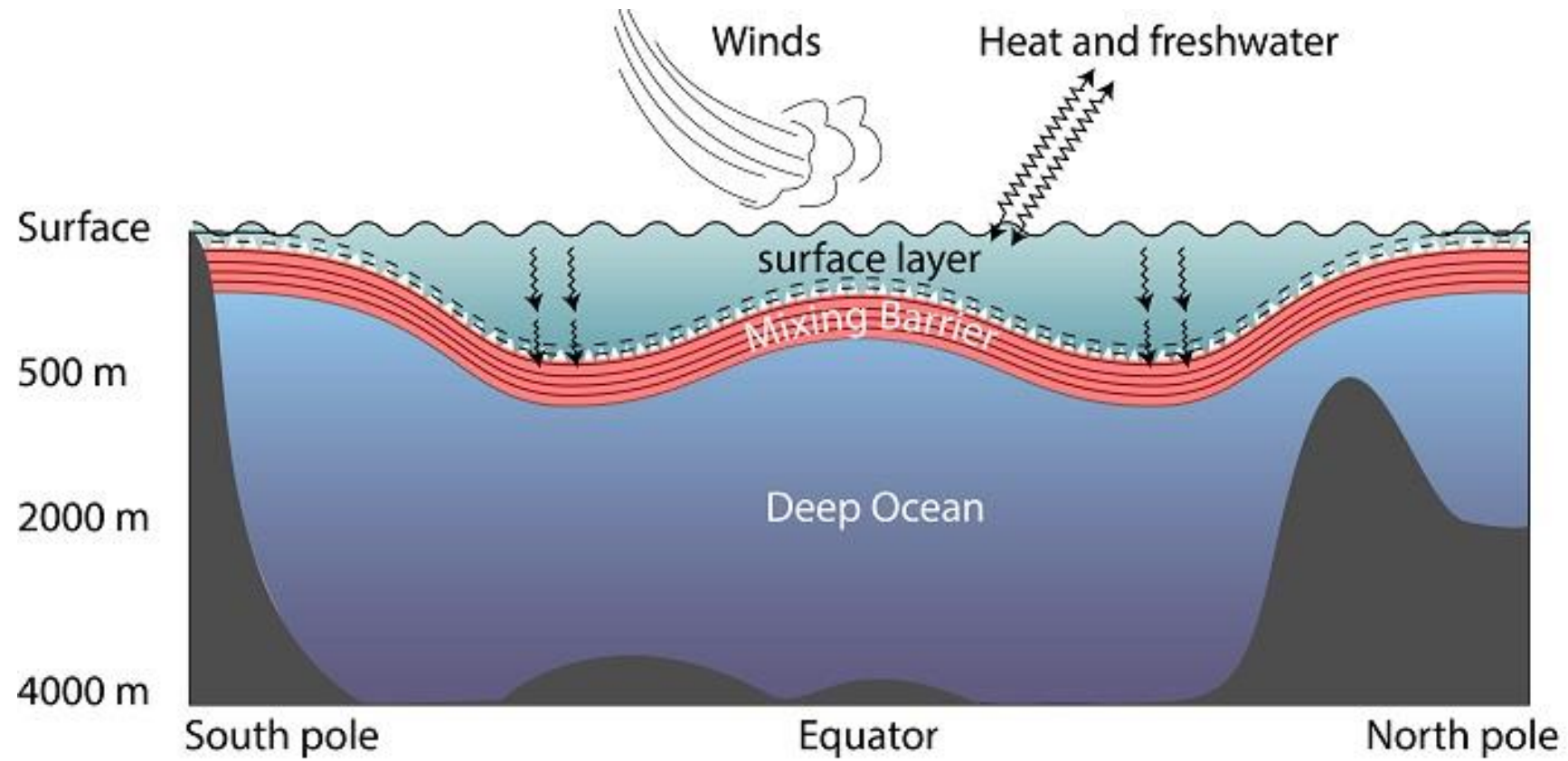


https://simple.wikipedia.org/wiki/Nitrogen_cycle

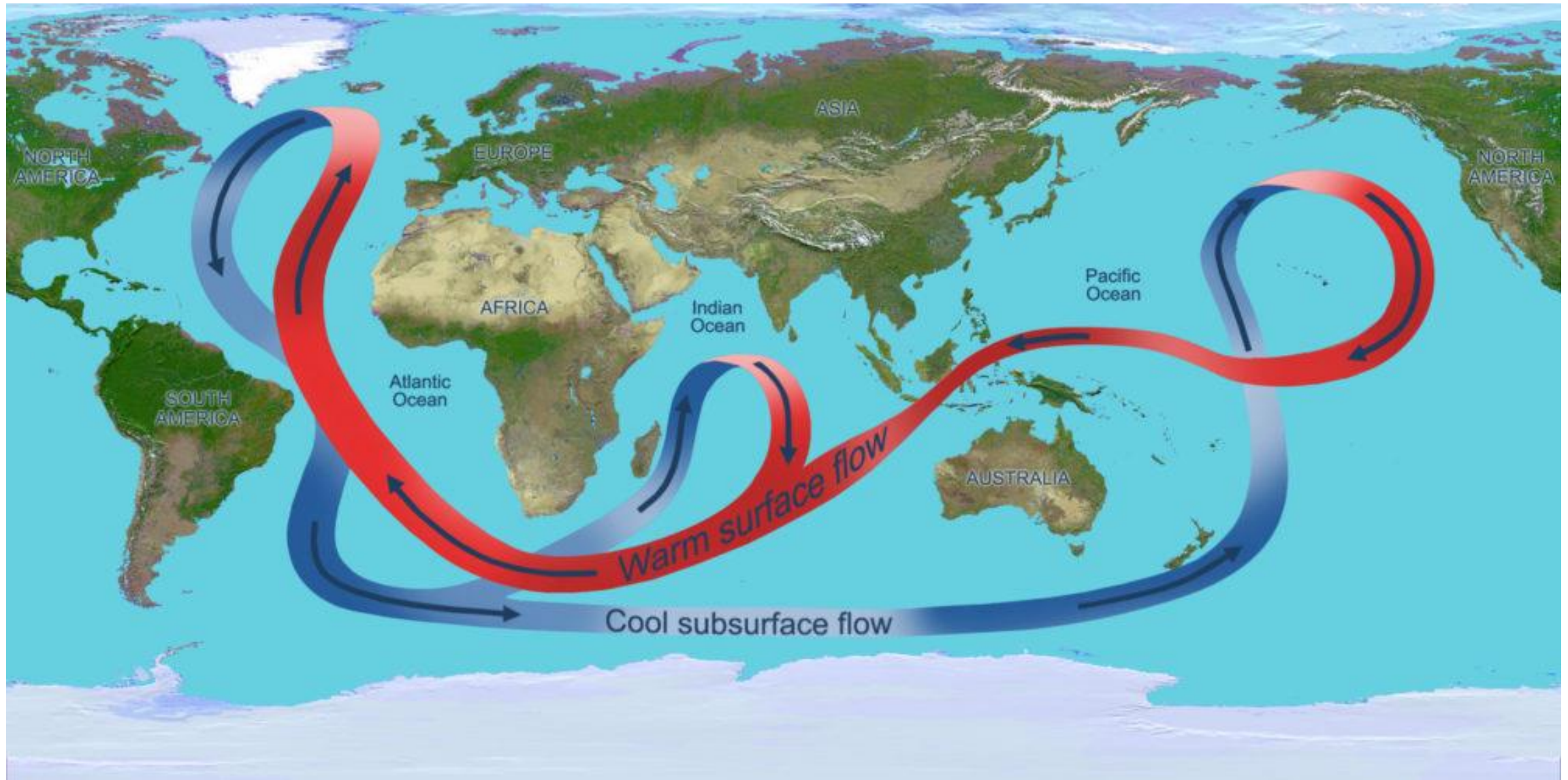
Page 25 –Phosphorus Cycle



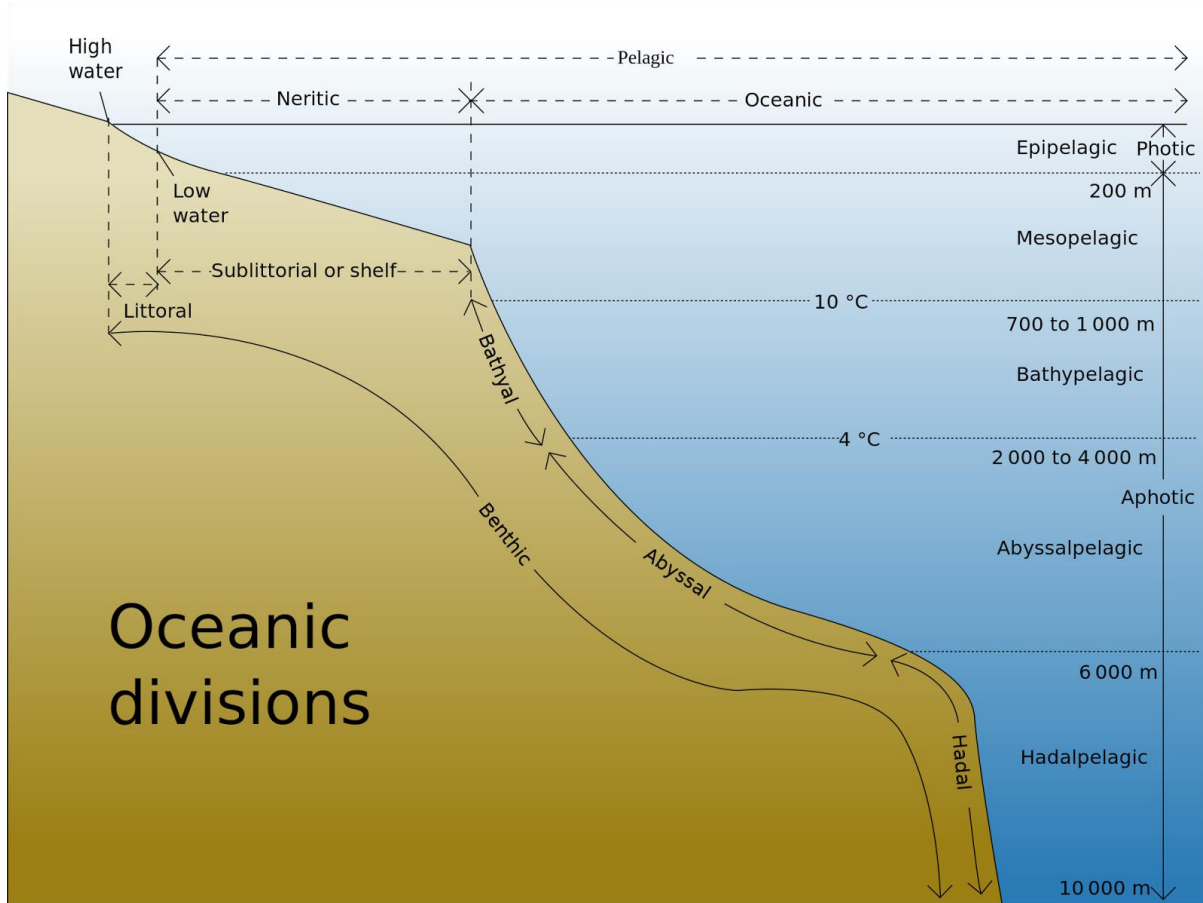
<https://ib.bioninja.com.au/options/option-c-ecology-and-conser/c6-nitrogen-and-phosphorus/phosphorus-cycle.html>



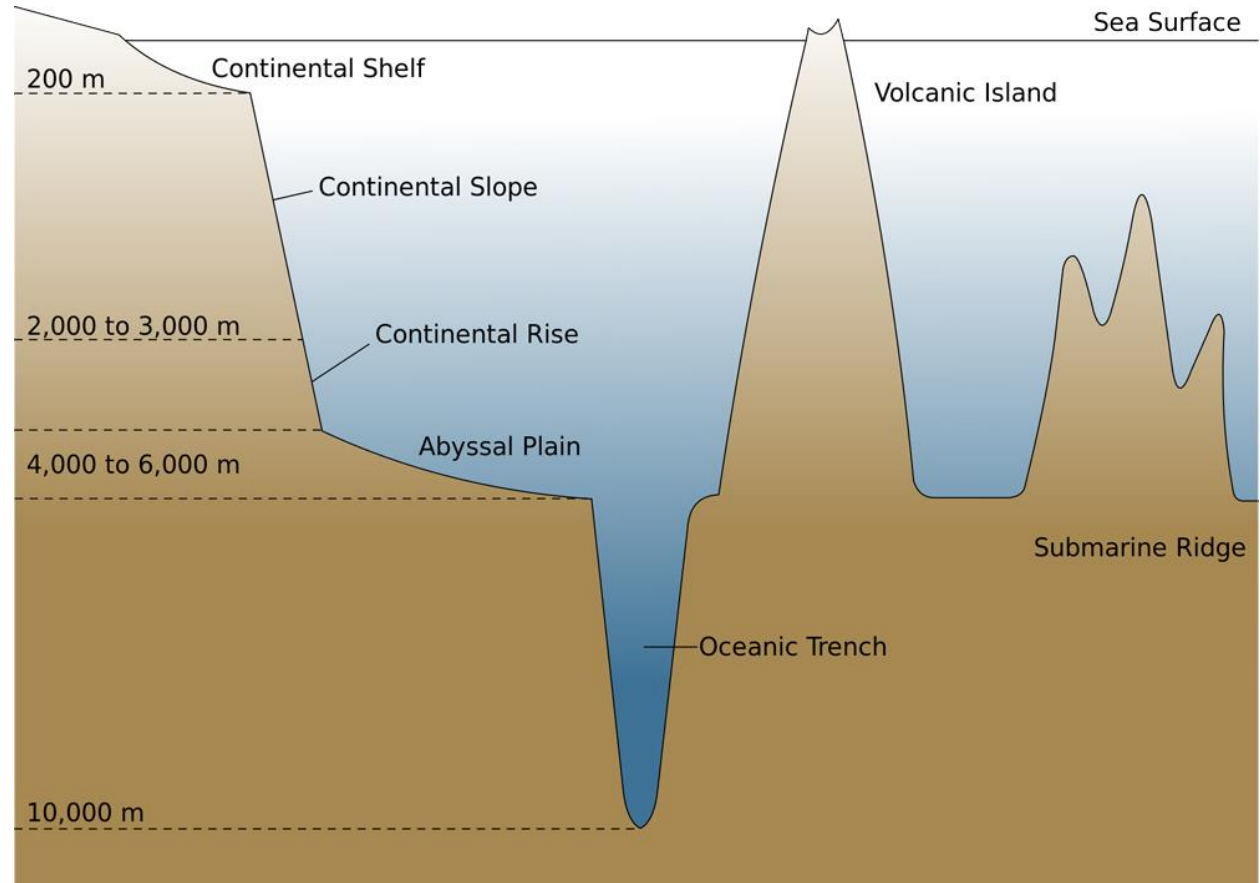
Page 25- Thermohaline circulation



Page 25- 1 : The different ocean biotopes
 2 : Some of the characteristics of an ocean basin



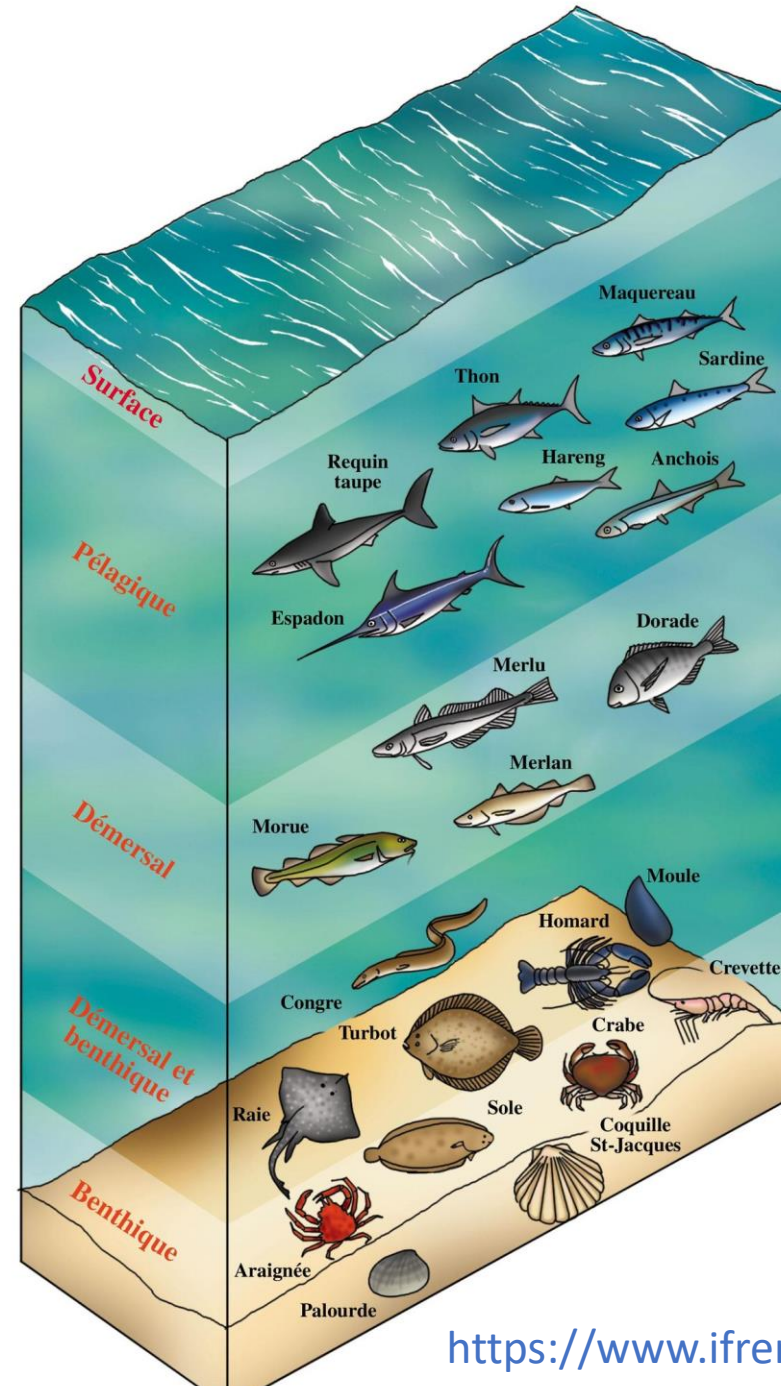
1



2

Page 27- The Oceanic Water Column,

Species living in the water column, more or less close to the surface, are called **pelagic**; those living in the water column, more or less close to the bottom, are called **demersal** and those living on the bottom or in the sediment are called **benthic**.

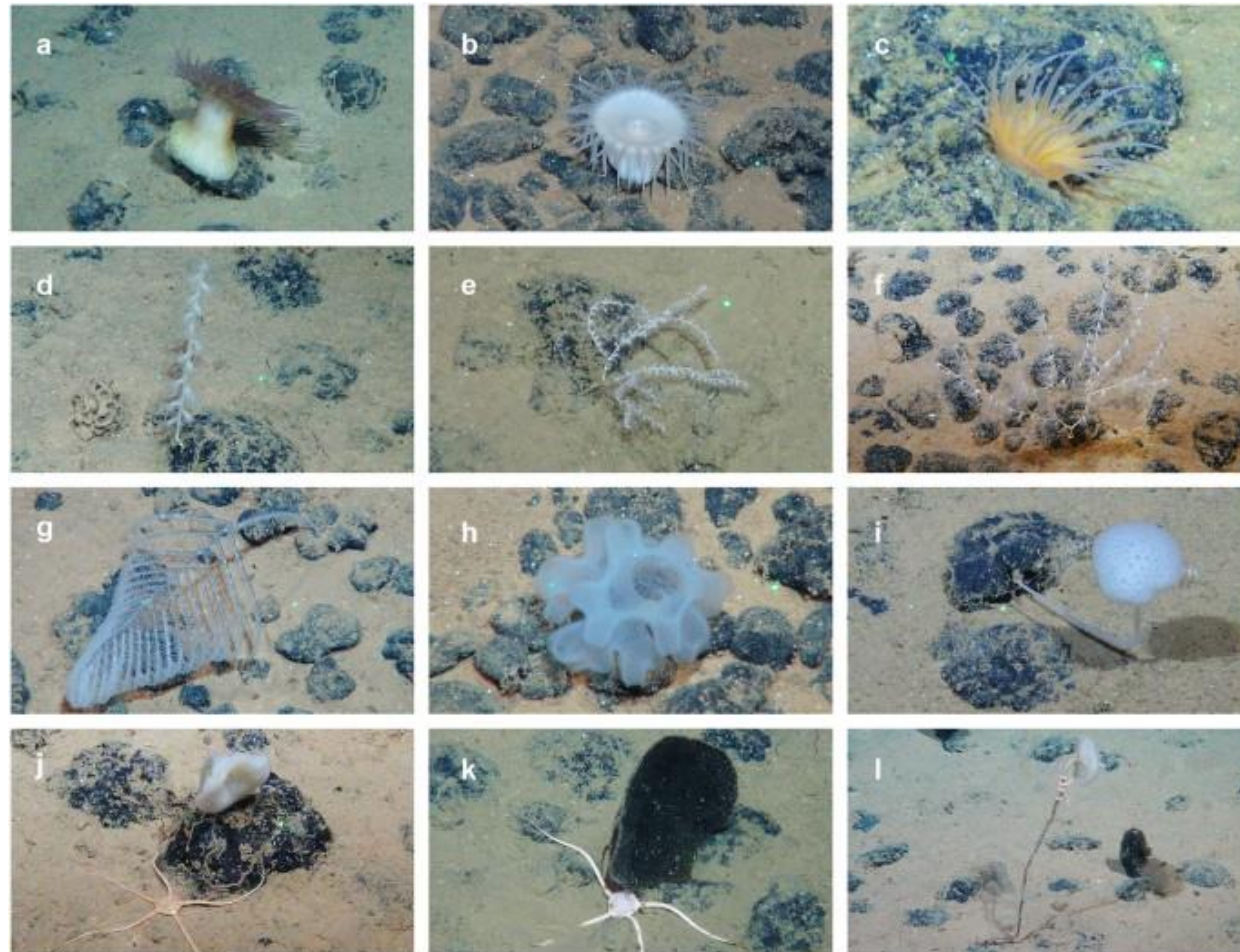


Page 27- Sea cucumber in a field of nodules



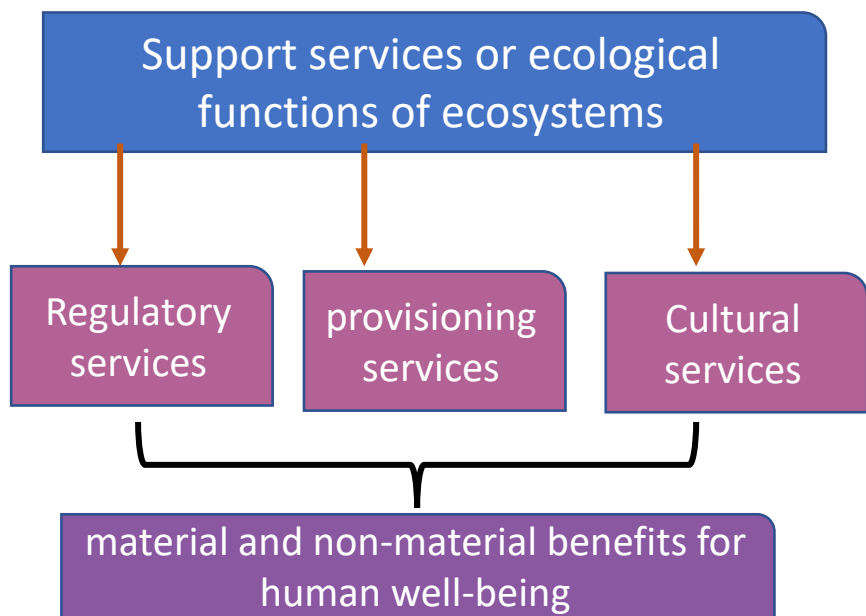
https://www.google.com/search?q=Concombre+de+mer+dans+un+champ+de+nodules&rlz=1C1GCEU_frMA1027MA1028&source=lnms&tbn=isch&sa=X&ved=2ahUKEwiAvvHg25_AhV1VqQEHzKgCfsQ_AUoAXoECAEQAw&biw=1680&bih=939&pr=1#imgrc=jaVQ56kJ2X6IM

Page 27- Fauna associated with polymetallic nodules



[Threatened by mining, polymetallic nodules are required to preserve abyssal epifauna | Scientific Reports \(nature.com\)](#)

Ocean Ecosystem Services



Domaines d'application	Organismes considérés	Molécules (exemples)
Cosmétologie et dermo-cosmétologie	Macro-algues et micro-algues Cyanobactéries et autres bactéries Champignons	Métabolites secondaires exopolymères, oligomères enzymes
Environnement (ex : antifouling, détoxification)	Macro-algues et micro-algues Cyanobactéries et autres bactéries	Enzymes polyesters biodégradables exopolymères, biocapteurs
Industrie pétrolière	Bactéries (ex : récupération assistée du pétrole)	Exopolymères
Agroalimentaire	Tous les organismes	Enzymes, exopolymères, métabolites
Pharmacologie/santé	Tous les organismes	Tous les métabolites.

Functional classification of ecological services (MEA 2005), https://uicn.fr/wp-content/uploads/2014/02/UICN_France_services_ecologiques_marins_et_cotiers.pdf, p. 8

Ecosystem provisioning services: some areas of potential value for marine organisms (French version), https://uicn.fr/wp-content/uploads/2014/02/UICN_France_services_ecologiques_marins_et_cotiers.pdf, p. 16