

Heat changes everything

Suggested online resources for Rail expansion student activity

Web page	Notes for teachers
Track basics http://www.railway-technical.com/archive/track-basics-v2.pdf	Useful information and diagrams for the structure of rail, especially the rail/sleeper/ballast section.
Jalopnik Watch the fascinating way railroad tracks are welded together https://jalopnik.com/watch-the-fascinating-way-railroad-tracks-are-welded-to-1786586635	Great closeups of the joining process and the sleepers, anchors and ballast. Includes a short video.
American rail Rail maintenance machines https://www.american-rails.com/railroad-maintenance.html	Lists and describes some different rail maintenance machines, including pictures.
Physics central Why trains slow down on hot days http://physicsbuzz.physicscentral.com/2014/07/expect-delays-why-trains-slow-down-when.html	Some great photos here, including buckling – that students can link back to earlier activities.
Queensland rail Current works rail grinding https://www.queenslandrail.com.au/inthecommunity/maintenance	Easier to read than the Wikipedia article below, and includes a short video of the grinder working at night.
Wikipedia - Railgrinder https://en.wikipedia.org/wiki/Railgrinder	Text-heavy and some more difficult reading/concepts. May need to guide students with this, or choose students who are confident readers. Particularly useful is the first paragraph subsection that explains the concept.
Wikipedia - Rail stressing https://en.wikipedia.org/wiki/Rail_stressing	Text-heavy and some more difficult reading/concepts. May need to guide students with this, or choose students who are confident readers.
Why rails buckle in Britain https://www.networkrail.co.uk/why-rails-buckle-in-britain/	Easier reading than the Wikipedia article, though the temperatures/conditions discussed are different to Australian ones. Would be a good point of comparison in a discussion for a group using this information though.