

# Heavy weather resources

---

## Good books for reading accounts of heavy weather

***Adlard Coles' Heavy Weather Sailing*** by Peter Bruce (A&C Black, 2004). While the current edition offers a well-thought out overview of storm tactics and a good collection of case histories, we still have an affection for the original K. Adlard Coles edition of this classic.

***Drag Devices Database*** (fourth edition) compiled by Victor Shane (Para-Anchors International, 1998). This is a compendium of over a hundred case studies of storm situations where crews deployed a drag device, either a drogue or a sea anchor. Reading this will make you aware the incredible variety of things that can and will go wrong in survival storms, but will demonstrate that the vast majority of boats and people caught in survival storms do, in fact, survive.

***Fastnet Force 10: The deadliest storm in the history of modern sailing*** (new edition) by John Rousmaniere (W.W. Norton & Co., 2000). This classic about a killer storm reads like a novel. The lessons learned had a major impact on both yacht design and storm tactics.

***"Investigation of the Use of Drogues to Improve the Safety of Sailing Yachts"*** by the U.S. Coast Guard (1987). The detailed report of the tank testing of various drag devices that eventually led to the development of the Series drogue. It offers a number of useful insights into the behavior of different hull forms when tank tested in breaking waves. You can download it from: <http://www.jordanseriesdrogue.com/pdf/drogucoastguardreport.pdf>. The site includes video footage of the tank testing as well as one amazing clip taken from a Coast Guard helicopter of a 64-foot ketch being hit by a breaking wave in the Gulf Stream.

***The NSW State Coroner's Inquest into the 1998 Sydney to Hobart Yacht Race***. This was the document summarized by Evans in the sidebar "The 1998 Sydney to Hobart race-A postmortem." It makes for fascinating reading and can be found at: [http://www.equipped.com/sydney-hobart\\_inquiry\\_index.htm](http://www.equipped.com/sydney-hobart_inquiry_index.htm)

***The 1994 Pacific Storm Survey*** by Kim Taylor (Captain Teach Press, 1996). This self-published pamphlet summarizes the major tactics and outcomes for the 20 crews Taylor was able to get information about in the aftermath of the storm. Though I do not agree with all of his conclusions, the catalog of case studies in real survival storm conditions is invaluable. Contact information: Boat Books, Ltd., 22 Westhaven Drive, Auckland, NZ; Telephone: +64 9 358 5691; Website: [www.boatbooks.co.nz](http://www.boatbooks.co.nz)

**The Wolfson Unit of Southampton University**. This is the pre-eminent tank test facility in the world and has been at the center of research on stability in sailing vessels since the Fastnet in 1979. To see a list of their published papers, go to <http://www.wumtia.soton.ac.uk/papers.html>. Many of these have been commissioned by clients, and the information in them is proprietary but quite a few can be downloaded. The original tank testing that led to the basic rules of monohull stability have always been included in

Heavy Weather Sailing (see above). The catamaran paper can be found at:  
<http://www.wumtia.soton.ac.uk/papers/CSYS2001BD.pdf>

## Contact information for drag devices

**Delta drogue.** Para-tech Engineering Company manufactures a parachute sea anchor and the Delta drogue, a fabric reversed “cone” with specially designed vents. Contact information: Para-tech Engineering Co., 2117 Horseshoe Trail, Silt, CO 81652 USA; Telephone: 1-970-876-0558 or 1-800-594-0011; Website: [www.seaanchor.com](http://www.seaanchor.com)

**Galerider drogue.** Hathaway, Reiser and Raymond designed and manufacturers the Galerider, a webbing “bowl” with wire rim. Contact information: Hathaway, Reiser, and Raymond, 184 Selleck Street, Stamford, CT 06902 USA; Telephone: 1-203-324-9581; Website: <http://www.hathaways.com/galerider/default.asp>

**Jordan series drogue.** Instructions for constructing your own drogue are included in the original Coast Guard report (*“Investigation of the Use of Drogues to Improve the Safety of Sailing Yachts”* see above). This can be downloaded from [www.jordanseriesdrogue.com](http://www.jordanseriesdrogue.com). Sailrite sells kits for making the cones (<http://www.sailrite.com/Series-Drogue-Complete-Kit-124-Cones>). A kit with the cones already made or a finished series drogue can be purchased from ACE Sailmakers. Contact information: 128 Howard Street, New London, CT 06320 USA; Telephone: 1-860-443-5556; Website: [www.acesails.com](http://www.acesails.com)

**Seabrake.** Australian “variable pull” drogue where at a certain speed additional surface area is deployed to slow the boat. If the boat slows too much, this retracts. We have no experience with the Seabrake but know several Australians who used it successfully. See <http://www.seabrake.com/index.html>

**Shark drogue.** This low-pull drogue has several interesting features including a line through the middle meant to attach a chain or anchor to that could be used in tandem with another drogue. Contact Fiorentino Para Anchor (see table below) or go to <http://www.para-anchor.com/pro.stormdrogue.html>.

**Parachute anchors.** Table 1 provides contact information for the different parachute manufacturers.

Table 1. Parachute anchor suppliers

Manufacturer	Contact info
Fiorentino Para Anchor 1048 Irvine Avenue #489 Newport Beach, CA 92660 USA	1-800-777-0732 or 1-949-631-2336 <a href="http://www.para-anchor.com">www.para-anchor.com</a>
Para-anchors Australia PO Box 1377 Sale, Victoria 3850 Australia	61 (0)3 5144 1244 or 61 (0)3 5143 2223 <a href="http://www.paraanchors.com.au">www.paraanchors.com.au</a>
Para-tech Engineering Co. 2117 Horseshoe Trail Silt, CO 81652 USA	1-970-876-0558 or 1-800-594-0011 <a href="http://www.seaanchor.com">www.seaanchor.com</a>

## Heavy weather videos on the web

- [http://www.youtube.com/watch?feature=player\\_detailpage&v=4ySCwgLa4p8](http://www.youtube.com/watch?feature=player_detailpage&v=4ySCwgLa4p8) – Fast reaching in strong winds and no waves. Compare to the next video in the open ocean where the winds were probably not that much stronger.
- <http://www.youtube.com/watch?v=gmhh-edqTdo> – What it's really like to be hove to in strong gale/storm conditions. This is what it sounds and looks like – notice how heeled over the boat is and the solid whooshes (but not crashes or thumps) of the waves as they go by.
- <http://www.youtube.com/watch?v=Nf7FddPO5QM> – Running under a storm jib. You can really see how the seas overtake the boat and how it responds at times by rounding up even with just the storm jib set. You can see the impact of design here – the boat's long overhangs make it hobbyhorse quite a bit as the waves pass under it. This is a case where a bit more sail area might help – but you'd want that sail area to be forward.
- <http://www.youtube.com/watch?v=p4oYkF3Ejuo> – Hand steering running free in 40 knots+ - we would be trailing a drogue. Very short, but you can see how much the helmsman is working the helm. And talk about an uncomfortable helming position!
- <http://www.youtube.com/watch?v=IIBDYVJFrHQ> – Rescue of the *Satori* during the “perfect storm.” The captain did not want to leave the boat and claimed she was doing just fine, that they had some water in the bilge from spray but he was regularly pumping it out and they were in no danger. Friends of ours that know him told us he was very experienced but had two inexperienced crew on board who called the Coast Guard and forced the rescue. The boat later washed up intact on shore with no damage. I would have said the boat was nowhere near foundering, as described in the video, and was doing quite well given the conditions she had already endured. But it's almost impossible to second guess...
- <http://www.youtube.com/watch?v=FddHsVTLbqE> – Photo montage from the *HMNZS Monowai*, the New Zealand research vessel that rescued several of the boats in the Queen's Birthday Storm. Notice how the cat seems to “walk” across the waves. This was not the worst sector of the storm.
- [http://www.youtube.com/watch?v=KhMjlc\\_UxQ&feature=related](http://www.youtube.com/watch?v=KhMjlc_UxQ&feature=related) – Photo montage of the 1998 Sydney to Hobart race taken by Richard Bennett from a helicopter. He has photographed every Sydney-to-Hobart for the past 30 years. We talked to him about this race, and ten years later he still couldn't find words to describe it. But he was astonished by how well the boats did in what seemed impossible to survive conditions.
- [http://www.youtube.com/watch?v=ujlL-ZGCVY0&feature=player\\_embedded#at=234](http://www.youtube.com/watch?v=ujlL-ZGCVY0&feature=player_embedded#at=234) – Running well in big seas and at least 40 knots of wind off the South Coast of Australia
- <http://www.youtube.com/watch?NR=1&v=iMwx1gYyFLw> – Good one for the sound of being on a boat in a good breeze. The conditions here are actually pretty benign – he says 30 knots and that's what it looks like. It's uncomfortable because they've got the wind forward of the beam – this would be a lovely downwind day in the trades.
- <http://www.youtube.com/watch?v=IV5IIWEEfAw&feature=related> – Sailing in gale force winds with trysail and storm jib. A good example of why storm sails are superior to reefed sails in these kinds of conditions – good sail shape on both the trysail and jib with no strain on the rigging.

- <http://www.youtube.com/watch?v=MToJDGQb4Kc&feature=relmfu> – Well worth viewing to understand mechanics of a rescue with a rescue swimmer (and why it's preferable to stay with the boat if at all possible). They would have been far better off if they could have hove-to the boat and allowed the rescue swimmer to swim to the boat. Knowing how to stop your boat even in these conditions is important. Notice that they are sailing first with the main sheeted in, but then they have the main flogging at the end, which did slow the boat down but not as much as heaving to would have.
- <http://www.youtube.com/watch?v=srdmp-uPhWQ> – Deploying and retrieving a series drogue off an Australian Coast Guard vessel. This gives a good idea of what deployment is like and how well the drogue stabilizes the boat. Unfortunately, they retrieve it by stopping the boat!

## Catamaran resources

- [http://www.multihullpages.com/heavy\\_weather.html](http://www.multihullpages.com/heavy_weather.html) - A too short but informative summary of 400,000 nm of catamaran experience
- <http://www.youtube.com/watch?v=NnBve75x04o&feature=related> – s/v Mariah – Interesting onboard introduction to what it's like at sea with a cat
- [http://www.maxingout.com/abbott\\_drogue.htm](http://www.maxingout.com/abbott_drogue.htm) - Do it yourself drogue arrangement used on catamaran. Don't know how it would work in practice, but excellent fallback idea if you lose your main drogue.
- <http://www.latitude38.com/lectronic/lectronicday.lasso?date=2010-07-07&dayid=449#Story4> Capsized 32 foot catamaran – gale conditions
- <http://forums.sailingworld.com/showthread.php?7272-Record-Setting-Catamaran-Capsizes-in-Bay-of-Biscay> – Bullimore's cat in Bay of Biscay. Sudden gust to 30 knots in otherwise calm conditions.
- <http://www.timesonline.co.uk/tol/news/uk/article7111417.ece?token=null&offset=36&page=1> – Story of Catana capsized in the Mediterranean told by the only survivor
- <http://www.syanna-kellywright.com/2010Trav2.html> - Description of Chris White Atlantic 57 catamaran in storm conditions
- <http://www.syanna-kellywright.com/LossOfAnna.html> - Capsized of Chris White Atlantic 57 in the Pacific due to a squall
- [http://www.chriswhitedesigns.com/news/anna\\_capsize/lessons\\_learned.shtml](http://www.chriswhitedesigns.com/news/anna_capsize/lessons_learned.shtml) - Chris White response to the loss of the Atlantic 57
- [http://www.chriswhitedesigns.com/news/anna\\_capsize/squall\\_stories.shtml](http://www.chriswhitedesigns.com/news/anna_capsize/squall_stories.shtml) - Heavy weather catamaran stories by some very experienced sailors in reaction to the loss of the Chris White Atlantic 57
- <http://www.youtube.com/watch?v=8CLlwKtdW94> - Capsized Atlantic 57 YouTube
- <http://www.youtube.com/watch?v=QMmZ9gCht7U> – A friend of ours on a 21-foot catamaran in Force 8 in the North Atlantic. He's lying to a sea anchor. You can see the bridle deployment and how relatively well the cat is lying to the wind. You can also get a feel for what the waves are like.

- <http://www.youtube.com/watch?NR=1&v=iUQ5sdEzOko> – Catamaran lying to a parachute in the Southern Ocean in an honest 50 knots. Only begins to hint at what it would be like aboard...

## Wave information

- <http://www.seafriends.org.nz/oceano/waves.htm> - Overview of wave behavior
- <http://www.icms.org.uk/archive/meetings/2005/roguewaves/presentations/Taylor.pdf> - Paper modeling the Daupner Wave on New Year's day 1995
- <http://news.bbc.co.uk/2/hi/3917539.stm> - BBC article on rogue waves
- <http://www.teachersdomain.org/resource/ess05.sci.ess.watcyc.wavemotion> - Animation of wave motion

## Heavy weather descriptions and other information

- <http://www.svquietly.com/ShipsLog/Caribbean%201500/Caribbean%201500.htm#Atlantic Storm> – Description of trying to use Pardey bridle system in 2010 Caribbean 1500 and crew calling for rescue by Coast Guard without captain's knowledge
- [http://holoholo.org/caldwell/bj\\_96/oceannav.html](http://holoholo.org/caldwell/bj_96/oceannav.html) - Summary of storm tactics and drag devices by Earl Hinz
- <http://www.bluesuit.co.nz/1994.htm> - Master of the *Monowai*, the New Zealand rescue vessel that assisted in the Queen's Birthday storm describes his experiences
- [http://boatbooks.co.nz/video\\_cd.asp](http://boatbooks.co.nz/video_cd.asp) - Video of the Queen's Birthday storm that has footage of sea conditions and of catamarans in survival conditions