

Breaking News:

exactEarth awarded agreement with the Canadian Space Agency
See our website for full details

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President's Message

I'd like to welcome you to this edition of exactNews, the first in a series of regular updates from exactEarth Ltd. that you'll be receiving this year. Since we launched NTS-1 in 2008 - the first satellite to prove that AIS messages can be picked up from space - it's been an exciting journey, culminating in the launch of the exactAIS™ global vessel monitoring service in August 2010. exactAIS™ is already providing a number of our customers with a comprehensive and persistent global coverage and is being used in various maritime applications, some of which are described later on in this newsletter.

So what makes our service different? The key is the quality of the exactAIS™ vessel detection – how many vessels we actually collect in a single orbital pass. It's all based on the advanced “decollision” processing that is carried out and it's been proven to capture up to 5 times more vessels than any other space-based system. This is described in the adjacent article and explains why it is critical to any successful maritime application. We plan to launch more satellites in the first quarter of 2011 carrying our advanced AIS receivers which will further increase detection performance by another order of magnitude.

2011 promises to be the year where S-AIS makes a huge impact on the maritime sector and at exactEarth, we are committed to remaining the industry leader and to helping ensure the oceans of the world are a safer and more secure environment than ever before.

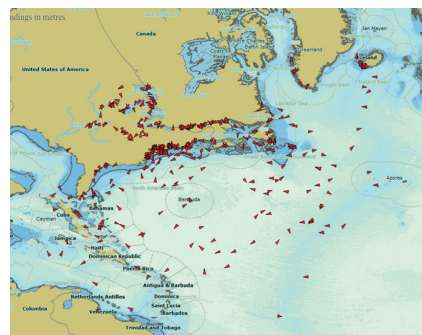
Peter Mabson – exactEarth President

Technology Update: What is Decollision?

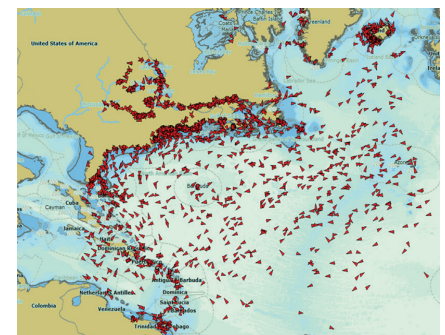
Decollision is a critical part of the exactAIS™ data service, but what does it mean? AIS was originally designed as a short range, surface system that operates using self-organizing “cells” – just like mobile phones – that ensure that the AIS messages from different vessels within the same cell are not broadcast at the same time. This is fine for surface cells (approx 40 nm), but a low earth orbiting satellite has a field of view (FOV) of 3000 nm (equivalent to over 5000 cells). This means that AIS messages from different cells within the FOV will inevitably be broadcast at the same time and so will “collide”, creating a degraded signal. This is a major issue in areas of the world with high shipping densities and will only increase as more vessels begin using AIS.

Any satellite receiving these “collided” signals has to make sense of them, and this requires extensive processing – or “decollision” - that only the exactAIS™ Data Service can provide. It does this using the massively parallel processing capability in its Toronto-based Data Processing Centre. Other satellite based systems can only process the signal onboard the satellite (“on board processing” or OBP) and tend to only pick up a fraction of the AIS messages. The figures below show the difference between OBP-produced data and decollided data – currently a fivefold improvement which will only get better when new exactEarth satellites are launched in early 2011.

More vessels detected in a single pass means better information
– and better decisions!



Best available onboard processing:
421 ships



exactAIS™ decollision:
2171 ships

exactEarth participates in recent AIS-SART trials with the US Coast Guard and IALA

On October 27-28, 2010, AIS-SART test trials took place in San Juan, Puerto Rico, organized by the US Coast Guard and IALA. AIS-SARTs are low power devices that can be carried on vessels or in liferafts and used in distress situations for search and rescue. The intent of these trials was to test low power (1W) AIS-SART transmitters in more densely populated maritime areas and to also test the new AIS Message 27 (Satellite AIS position report). exactAIS™ came through with flying colours, detecting all the test signals and also proving that the new Message 27 could be captured from space.

exactEarth and the IMO



exactEarth recently had the privilege to present to over 150 delegates at the International Maritime Organization's Maritime Safety Committee (MSC) Meeting in London, England. The address highlighted the potential role of Satellite AIS for improving the safety of shipping and its potential use in a number of safety and security related applications. exactEarth introduced the now live exactAIS™ service and highlighted some of its key applications already in use at customer sites. The presentation sparked some lively discussions and has already led to a number of new application areas being explored.

<http://www.exactearth.com/news/exactearth-presents-at-international-maritime-organization/>

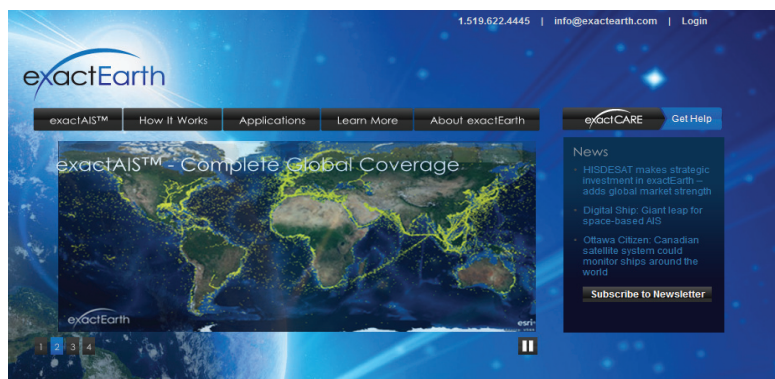
Partnership with ESRI

exactEarth is now an approved Business Partner of ESRI Inc. ESRI is a world leader in geospatial analysis software and its primary product, ArcGIS, is used in over 350,000 organisations worldwide and forms the basis for many maritime charting and operational systems. exactEarth and ESRI are working together to integrate the exactAIS service with ESRI's Tracking Server product line which will enable ESRI users to easily integrate the exactAIS data service into their GIS and Geospatial Intelligence applications.



exactEarth's New Website

We welcome you to experience and explore exactEarth's new and interactive website. You can learn more about exactAIS and its wide range of applications, as well as sign up for a range of updates. Check it out at: www.exactearth.com.



Upcoming 2011 Events

Visit exactEarth at the following upcoming events and experience exactAIS™ live. [Click here](#) for more details on exactEarth events.

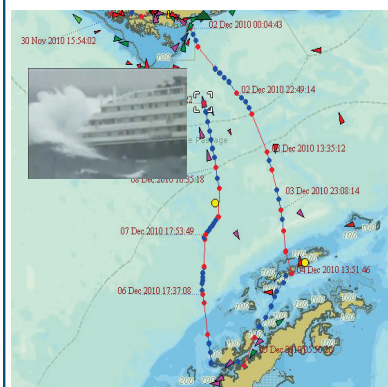
Naval Security and Maritime Domain Awareness Sypsoium
March 22-23, 2011
Washington, DC

National Space Symposium
April 11-14, 2011
Colorado Springs, Colorado

Maritime Security Conference 2011
May 2-5, 2011
Kiel, Germany

Recent Maritime Events

The Clelia II, on a cruise to Antarctica, lost an engine in high seas while navigating the Drake Passage. The exactAIS track clearly shows when the emergency happened and the subsequent actions of the ship to return to safe waters. The conditions were captured on a video which can be found online - [Click here for the YouTube video](#).



Maritime events are posted regularly on the website on our new blog- exactBlog

HISDESAT S.A. takes a share in exactEarth Ltd.



HISDESAT Servicios Estratégicos S.A. (www.hisdesat.es), a major Madrid-based

satellite operator and service provider that sells data to more than 25 government customers around the world, has taken a 27% equity interest in exactEarth Ltd with a cash investment of Cdn\$15 million. This cash investment will support exactEarth's on-going business operations and the deployment of additional space and ground infrastructure and implies a value of Cdn\$55.5M for exactEarth Ltd.

Peter Mabson, the President of exactEarth Ltd commented "We are excited to have access to HISDESAT's data services expertise and global market reach. These strengths are very complementary to exactEarth's strengths in AIS and satellite technology and will prove invaluable as we roll out our exactAISTM data services into the international marketplace." HISDESAT's investment follows closely on the heels of the successful exactAISTM service launch in August 2010.

HISDESAT will also represent exactEarth as a reseller in a wide range of market territories in South and Central America where they have an established market presence. In addition to this, it is expected that HISDESAT will operate a second data center in Europe on behalf of the exactEarth business, in a move that will further improve the overall reliability of the exactEarth global AIS system.

Satellite AIS Applications

exactAISTM provides unprecedented visibility of global maritime traffic and vessel movements and as such has enabled new maritime applications to be developed as well as enabling other more established Maritime Services to be extended beyond the range of terrestrial AIS. These include:

<p>Vessel Traffic Monitoring</p> <ul style="list-style-type: none"> • Notice of Arrival • Validation of Declarations • Ship Routing/Safe Sea Speed Assessment <p>Ship Reporting</p> <ul style="list-style-type: none"> • Enhanced Environmental Monitoring • Improved "Integrity of Ship" Reporting • Compliance Checking <p>Fisheries and Environmental Protection</p> <ul style="list-style-type: none"> • Fisheries Monitoring • EEZ and Resource Monitoring • Marine Protected and Environmentally Sensitive Area Protection 	<p>Security, Surveillance and Border Protection</p> <ul style="list-style-type: none"> • Risk and Threat Analysis • Abnormal Behaviour/Suspicious Activity Monitoring • Creation of the Maritime Picture and Integration with C2 Systems • Ship Report Verification/Data Integrity Checking • Historical Vessel Tracking • Anti Piracy Operations <p>Search and Rescue</p> <ul style="list-style-type: none"> • Reception of Remote LSA (SART, EPIRB, etc.) • Selection and Coordination of Vessels in Vicinity • Degradation of Seaworthiness Analysis
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There are more details on these applications on our website (www.exactearth.com) and we would be interested to hear of any other ways you are using S-AIS data in your work.



Figure 1 - Plot showing all global vessels captured over a two week period. In Q1 2011, with the launch of new advanced exactAISTM receivers, the full global vessel picture will be refreshed multiple times daily.

About exactEarth Ltd.

exactEarth is a data services company based in Cambridge, Ontario, Canada and is supported by an established network of regional offices and technology partners worldwide. To learn more about exactAISTM, or to set up an evaluation of our global vessel monitoring service, please contact info@exactearth.com.