

# The Story of "Oceans"



# “Oceans”

The big story on this big picture, “Oceans,” was not merely skillful use of cookies. Over five years in production, “Oceans” was released in France and will be distributed in the U.S.A. by Disney later this spring.

“Oceans” was produced and directed by the team who brought us the Oscar-nominated film “Winged Migration,” Jacques Cluzaud and Jacques Perrin.

The Renaissance-filmmaker Perrin is a producer, director, and actor with major film credits, including “Z,” “Black and White in Color” (Oscar, Best Foreign Film, 1976) and the title role in “Le Crabe Tambour” (Drummer Crab), magnificently shot on rolling ships and seething seas by the incomparable Raoul Coutard, AFC. There’s a nautical theme here; Perrin also produced the documentary “Tabarly” about the legendary French long-distance sailor.

Philippe Ros was the Digital Imaging Director, Technical Supervisor of the Image, DP on macro, microscope, and night shooting, and creator of digital tools for this adventure. He started in 2004, had one year of preparation, and then the production asked him to be supervisor of the image and develop special tools for the production.

“It began,” he said, “with the concept for the film by Jacques Perrin and Jacques Cluzaud. What ‘Winged Migration’ did for the air, this film would do for the sea. It was to have a film-style aesthetic to evoke audience emotion and connection to being in phase with the animals, like a dolphin among the dolphins, like a musical score finding the right tempo.”

Philippe sang the praises of production manager and line producer Olli Barbé. Over the next week, every crew member I met was equally enthusiastic about Olli’s dedication and contribution to the production. This is a rare species indeed: a producer universally beloved and respected by the crew. Early on in pre-production, Olli decided to dive deeply into the digital world with Philippe Ros. The two visited every IBC and trade show together, learning about the latest technology that might help transform “Oceans” from concept to screen. Olli, who also line-produced “Winged Migration,” was fascinated by the new technology and marriage of film and digital.

Philippe said, “Olli was absolutely decisive. Without his understanding of all aspects, his humanity, and the cleverness of his approach, such a project would have been impossible to succeed.” It’s a rare producer who gets such praise. Everything topside was shot on 35mm film. Almost everything underwater were shot on Digital HD with Sony F900 cameras, except for slow motion and a few other scenes. HD was chosen because of its longer (40 minutes) runtime, compared with a 400’ film magazine (4 minutes).

It all had to match. That’s where Philippe’s odyssey began. He coordinated the matching and intercutting of footage and files from vastly different locations, with different sea conditions, colors, textures, time of day and formats, shot by many different camera operators over many years. Scenes ranged from giant whales to microscopic plankton. Using uniquely designed color management, de-graining of film, and up-rezzing of files, Philippe said the big challenge was matching 35mm film with digital when so many shots were done under totally different sea conditions, at

different depths, different times of day, and with different lighting. To manage all this, Philippe began his tests by working backwards. First, he considered the deliverables: from Imax theatrical screening to film, digital and internet releases. The year of testing involved choice of cameras, lenses, support equipment, logistics and crew considerations. Most of the equipment used on “Oceans” was custom-designed or modified to withstand the rigors of long weeks at sea, underwater, all kinds of weather, vibrations, shock, shipping and slipping.

Among the heroes of this production—and we will meet many in the following pages—were chief DIT François Paturel and colorist Laurent Desbruères. Philippe said, “The role of the DIT and the colorist were so important that I must say that, if you allow me make such a remark, it wouldn’t be fair to speak about the quality of this film without mentioning their huge contribution to the entire process. Without the skills, the control of Laurent, without the leading-edge knowledge and talent of François, the film would not be like this.

“In the same way, Luciano Tovoli, AIC, ASC was essential and influential to the success of this film. He was Director of Photography on all the dramatic sequences topside, and above all, the artistic supervision of the grading for 18 weeks. I had the pleasure to help him during all these weeks as Technical Supervisor. It was a great encounter.

I would like to take this opportunity to praise Paul (PJ) Johnstone, the head gaffer who worked with me on all the underwater night shots and special sequences for many months. I learned so much about underwater issues from P.J. and his team. It was hard to say good-bye to such a talented underwater and topside gaffer.”

Next stop on my tour with Philippe was Digimage Cinéma, the post production facility where “Oceans” was finished.

When they open “Oceans” in the US, I hope they send Philippe to meet the press the way he generously met with me.

<http://oceans-lefilm.com>

[disney.go.com/oceans/](http://disney.go.com/oceans/)



Philippe Ros, DP and Digital Imaging Director





Above: René Heuzey (left) and Philippe Ros with Subspace Underwater Housing for Sony F900 and "Game Boy" underwater FIZ and Transvideo monitor.

"Oceans" Galatee underwater "Studio" Housing and remote control "Game Boy" with Transvideo in housing, with U/W cameraman René Heuzey (left) and DP Philippe Ros (right).

Below: the floating lab: Philippe Ros (left) and François Paturel (Chief DIT). Photo: Johann Mousseau.

Olli Barbé, Production Manager and Line Producer





# Jacques Cluzaud on “Oceans”



Jacques Cluzaud (*left*) and Jacques Perrin (*right*)

When I shot films for National Geographic, our scripts had to follow their strict Manual of Style. “No superlatives, no adjectives you cannot support. Just the facts.” This would be good advice for many ad agencies and most film reviews. However, modest assessment of the film “Oceans” just doesn’t work. It is, quite simply, the most beautiful underwater film I have ever seen.

Don’t take my word for it. *Le Figaro* called it “A sumptuous operatic film about the sea.” *L’Express* writes, “Oceans takes us under the four corners of the world and is a feast for the eyes.”

“Oceans” director Jacques Cluzaud called from Skywalker Ranch, where he is mixing the American version of the film for its release by DisneyNature on April 22. The French version has been in theaters in France since January 27.

## Jon Fauer: How is the American version different?

Jacques Cluzaud: The American version is 20 minutes shorter, has a narration by Pierce Brosnan, includes more nature and skips the sequences in the museum. The narration script, which we recorded last week in Los Angeles, was written by Michael Katims, an American living in France. We kept it close to the French version, intact, with its dramatic story.

This is not your usual nature film. It’s not like a documentary or educational film. We avoid narration about scientific facts or technical discussions about the animals. This is a wonderful story about the sea and its creatures, following them, filming them like real characters. All our cinematographers developed the look, like

in a feature film. It was much more interesting. The animals were real characters. We get to know them.

## On the website, you show the cast of characters.

To make this film, we worked with two different types of crew. One kind spend their time filming nature—they are able to hide, patiently, for long periods of time waiting for the animals, and they follow the animals in their real way of life. We’ve worked this way before, both on “Winged Migration” and now on “Oceans.” Many of these camera crews have haven’t worked on dramatic feature films; they spend their lives underwater, or on location, and they are incredibly professional doing that. But on this film, with people like Philippe Ros and Luc Drion, coming from feature films, we used some of the same equipment and techniques as on a dramatic feature. And I also come from feature films. So does Jacques Perrin, who’s also an actor, producer, and director of features with actors.

On “Oceans,” as on “Winged Migration,” we are not just looking for real nature footage. We are looking for drama and dramatic sequences. Like a feature, we were very careful about finding the right camera positions.

We had a real script. Our story was to evoke emotions from our scenes about the sea. We spent two years writing on the script. It wasn’t, “Oh, we want to film a whale, or these fish, or something like that. Not at all.” We had sequences storyboarded in advance. Our structure takes us from the first steps of the animals, un-



derwater and arriving, a very long time ago, on earth. The story shows the tenderness between the animals. We see how they feed together as large families. And so on.

And then we started making a schedule: where to go, when, and how. But the main thing about the script was always to show the emotion in context of sequences of scenes.

Sometimes we have a shot not because it's exceptional but because it's part of the flow of the story. Sometimes we filmed incredible things that are not even in the film; they didn't make the final cut because they did not advance the story. For example, we filmed a blue whale with her baby. This had never been done before. Never. But, of course, when the film was 3 hours long, certain things had to be cut. Even for the French version! But if you didn't know that the blue whale and her baby had never been filmed before, in "competition" with some of the other incredible sequences of mothers with their babies, like the baby humpback whale or the walrus and her baby, we had to go with the ones that had the most emotion, that were stronger. We have to feel the animals when we see them—we don't speak about it with words, but we have to let the audience feel the emotion because they see it. You have to feel it because you see it. If it doesn't talk as much as your heart, then better not use the scene.

### **Tell us how you got started in the film business.**

I started as an assistant director. I was first AD on feature films for 10 years, films like "Indochine." Then I worked writing scripts

and making special format films for Futuroscope, a studio and theme park near Poitiers, doing special format, large format, 3D, and Imax films. When you do this kind of production, you have to think about the screen size first, then build the projector, the camera and the equipment, because it usually doesn't exist before starting on the project. Every time you start from the beginning, because you don't have a reference, nobody has done this before.

That was how it started with Jacques Perrin on "Winged Migration." He said, "we'd like to fly very close to the birds, so how can we do that? I don't know."

That was also the philosophy on "Oceans." Of course we can go underwater. But my experience with inventions to let us see something new in a different kind of way—that was a good school for this kind of thing. If the equipment didn't exist, we would have it specially built. So, we had new underwater housings with helpful controls, pods, waterproof remote heads, miniature electric helicopters with stabilization, and many other things custom designed.

### **What came first: the idea or the technology?**

The idea came first, from Jacques Perrin. After "Winged Migration," we did a three-hour documentary series on birds. After that, Jacques Perrin said, "Do you want to work together as co-director on a film we will call "Oceans?"

What's important to remember is that even at this early stage, it was going to be a feature film, with characters and actors. The very

# Jacques Cluzaud, continued

first script was about Paul Watson, president of the Sea Shepherd Conservation Society, and former board member of Greenpeace. Every year, he went on boats to protect the whales, prevent drift-net fishing, and try to protect nature everywhere. After working on the script for a very long time, Jacques Perrin said, "This is not enough." We moved on to other dramatic scripts, with fishermen and other characters. After two years on this script, we realized the film would be too long. So, we abandoned the idea of human actors, except the father and his son, played by Jacques Perrin and his son, and the man swimming with the great white shark.

We filmed the man swimming with the great white shark, an animal that most people normally don't like, off Guadalupe Island. And when I went to this island 250 miles southwest of San Diego, off the coast of Baja California, Mexico, we shot according to the storyboard, one by one. This was interesting, because if we didn't have this feature-style beginning, I'm very sure the film would be different. We wouldn't have been as free as we were to look for things that express something directly, with no explanation.

We had a storyboard, we organized the shooting, but at that time, the man swimming with the shark was a real character, which we then changed, and now he's just a diver—it's no longer important who he is. That was François Sarrano,

We spent two weeks there, swimming every day with the sharks, and we had these very long shots when Francois was swimming with them.

## How did you prepare for this?

François had experience in South Africa. He was the only one who had the experience of swimming with these sharks outside a cage. Didier Noirot also had experience in South Africa filming sharks, but none of the other underwater cameramen had done this before with great whites, even though they had done this with blue sharks, tiger sharks, but not the white shark.

So, at the beginning, since most of the crew had never filmed outside a protective cage, we had cages nearby just in case. And it took a while, but soon everyone realized that François Sarrano was right, there was no danger, because what's difficult is the shark is not afraid of you, but they are rather shy, very attentive, prudent and cautious. They don't want to get in a situation where they might be injured. As soon as there's a noise or lots of movement, the shark goes away. So, around these sharks, we had to be very calm and quiet. But, by the end of the second day, everyone understood that there really was no danger, because never has a diver been attacked by a great white shark. (editor's note: Film and Digital Times has not tested this ourselves, nor can we guarantee the safety of encounters with large sharks whose teeth are numerous and sharp.)

I'm speaking of divers, not swimmers. The diver in Australia who was bitten was actually fishing at the time, so the shark went after the fish, like a dog goes after a bone. Well, the shark missed a bit, but the man wasn't eaten. Of course there are many examples of surfers being attacked, because the surfers are in the sharks' territory and the shark cannot see clearly in the big waves, so it attacks. There are dangerous situations, but it's not a dangerous animal.

## Tell us about finishing the film in 4K.

Philippe Ros was our technical advisor from the very beginning. He always helped us and pushed us to do better, to go further. When we first started, years before, we began working with Digimage Cinéma. The tests were done in the beginning knowing we would grade and finish the film there. We knew we would have to intercut 35mm film and digital. Digimage Cinéma showed us the difference between a 2K and a 4K finish, and we knew we wanted to strive for the best possible quality. On a small screen you might not see the difference, but on a big screen, there's a big difference. We saw it clearly.

## This is a brave example for other producers.

When we saw the film projected on a big screen, it was really fantastic to see all that detail. And Laurent Desbruères did an amazing job at Digimage Cinéma, spending so much time grading each image.

## How did you meet Philippe Ros?

I had been shooting with a good friend of mine, cinematographer Michel Benjamin, who came to my house one day and said, "This is the man who knows everything about HD." Others had been introduced before, but he was right: Philippe was the one. He did research, explained everything to us, compared all the cameras, discussed gamma. We would say, "Yes, that looks great." And Philippe would say, "But we can do it even better." He was amazing.

What I really think of this film, there was something special. All the people who worked on the film and stayed on the film for all those years were the ones who wanted to go further. They were interested in new inventions, not to do what they already knew.

It was true with Jacques Perrin, a man with a passion to be with people who are willing to show something they don't already know. He's not someone who says, "OK, go and shoot and I want this and that."

Instead, he says, "Go, and maybe if you can go even further...it could be interesting."

## Almost everyone on the crew said that when they wanted to do something better, you and Jacques Perrin gave them the opportunity to try it. You never said it was good enough.

Jacques Perrin always said, "Yes, you can go back and try again. If we need more money to do it, I'll try to find it." For the sound also—there were some innovative and interesting things done with the sound.

## You and Jacques Perrin work closely together?

Jacques Perrin said, "Every project we start is like going back to University. We ask the teachers to come, and then we spend 3 or 4 years studying and learning about something new."

He and I are co-directors. He is also the producer. In the beginning we had one team, but as time went on, we had up to 6 crews all shooting at the same time.



# Luciano Tovoli, AIC, ASC

Luciano Tovoli, AIC, ASC, got in touch from Rome.

## How did you first become involved in the film?

I had already shot films with the director-producer-actor Jacques Perrin, so when he decided to shoot some classical scenes with himself and his young son Lancelot as actors, he thought of me.

## How did you get started as a Cinematographer?

After graduating as a cinematographer in the same year as Nestor Almendros from the Centro Sperimentale di Cinematografia in Rome in 1958, I was called by the director/cinematographer Vittorio De Seta for a documentary to be shot in Sardinia. Instead of remaining on the island for the 15 planned days, 4 of us remained for 8 months, and we made a black and white film entitled "Banditi ad Orgosolo" that received several awards for cinematography. I was the co-cinematographer and operator.

## You were the founder of Imago?

Yes, I am the father of IMAGO. I had the original idea, in 1992, to find the money to invite English, French, and German representatives to Rome, and we started to discuss the possibility of a European Federation of Cinematographers.

We officially started the Federation in 1993, registered in Paris, with myself as first President in Rome. At the same time, I worked to push our Belgian and Spanish colleagues to found societies so they could join IMAGO. They brilliantly did that in few months. In 2007 I made a movie in Tokyo and spoke about IMAGO to my Japanese colleagues. Thanks to the work of the IMAGO President Nigel Walters, BSC and the General Secretary Jean Philippe Capelle, SBC, they decided to join, and now we have 29 European societies, with an additional 9 outside Europe, and growing every year. On March 26, 27, and 28, 2010, we will meet in Rome at Cinecittà Studios for our International Annual General Assembly. Delegates are coming from all over the world. [www.imago.org](http://www.imago.org)

## Talk about color grading on "Oceans."

I just put my eyes and experience at the service of the magnificent work of my colleagues and I listened attentively to the creative propositions of my technical master, Philippe Ros and of the talented colorist Laurent Desbruères. Easy job with such people around me! Of course, the constant presence of the two directors, Jacques Cluzaud and Jacques Perrin, has been of great inspiration. Thanks to the producer-director Perrin, we had the time to do the work properly, I think.

## Where is cinematography headed?

If the cinematographer will continue work in conditions to create with freedom and in harmony with a director and to participate to the last phase of the process, we will continue to have the same heading. Otherwise I will change course and go sailing!

## What is your favorite restaurant in Rome?

That is the easiest and at the same time the most difficult decision to be taken. So many good restaurants! My choice? A Tuscan one, "Nino" at via Borgognona 11.

Back in Paris, we screened all the dailies, and as the years progressed we knew what we had and what we needed. During the editing of the film, Jacques and I were always together, We had two editors, and about 580 hours of material. I would say more than half, maybe a little less than 2/3, of that was HD. The rest was film. We worked very closely.

Luc Drion, Didier Noirot, René Heuzey, David Reichert and all the others were fantastic cameramen, filming from Alaska to the Antarctic, Madagascar to Mexico, making tests, trying new things, all very great contributors.

Luciano Tovoli was DP of dramatic sequences and also was with us for all the grading, with Laurent and Philippe, which took a long time and was very important, but fantastic.

## What's your next project? Outer space?

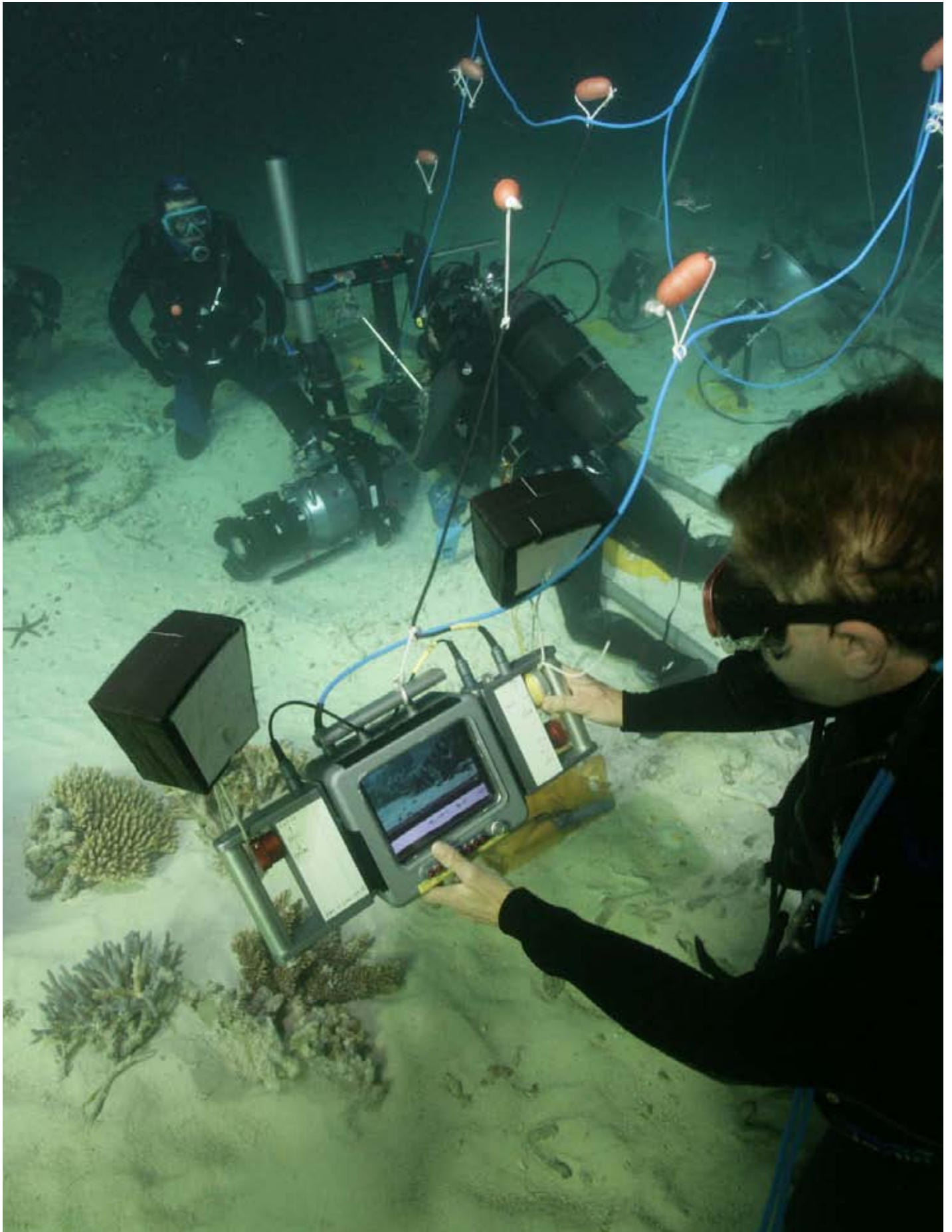
I was talking to you earlier about the baby blue whale shots that are not in the film. We are first going to work on a TV series with material that wasn't used in "Oceans". We'd like to go into the treasure that we have and make something nice out of it, keeping something special, which is to go close to the animals and stay with them. Not a nature scientific film, but a work with a lot of scientists to help us.

And then, maybe back to fiction.

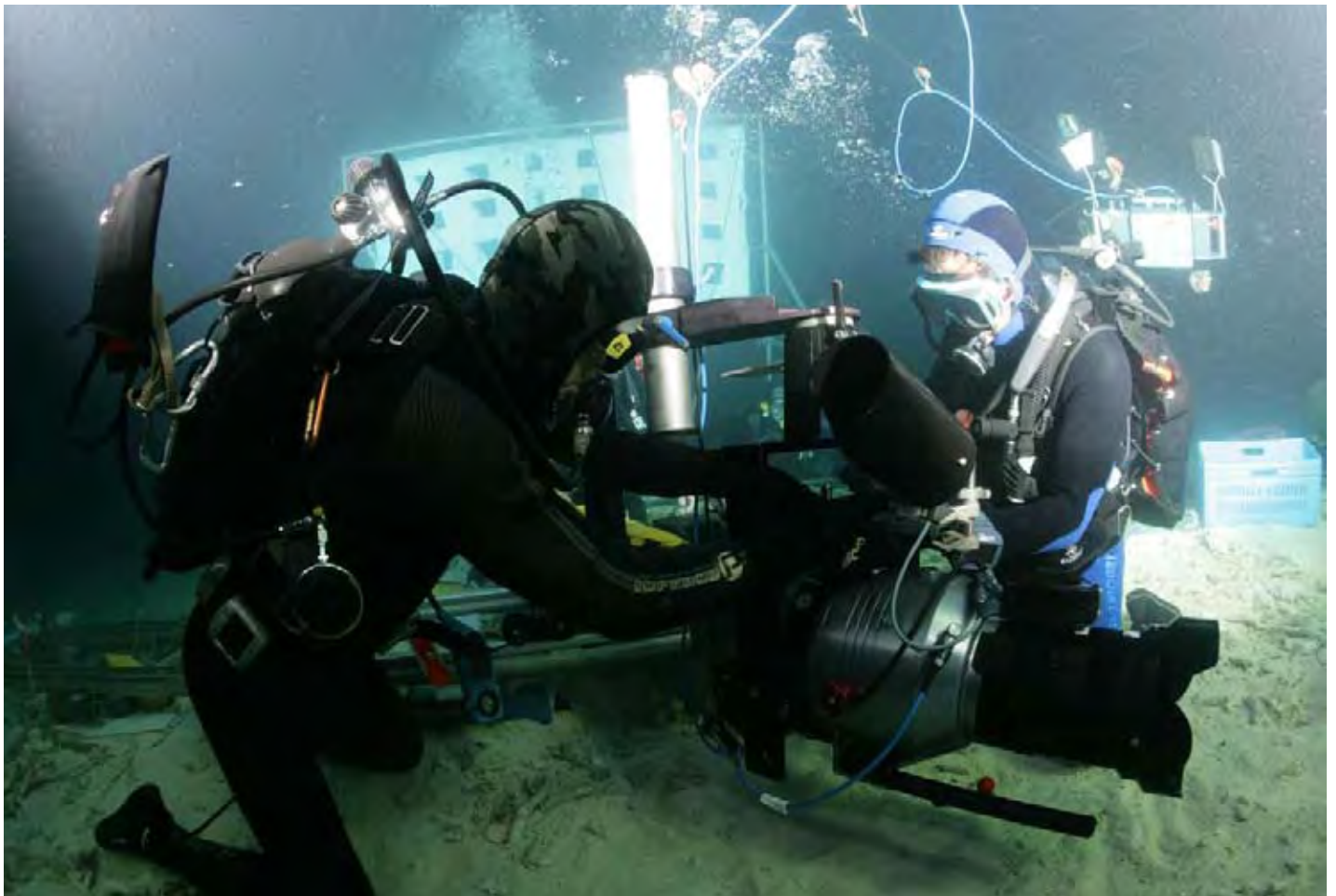
Or maybe something in 3D. That is very interesting. We did some 3D tests, and also blowing up to Imax. But yes, maybe 3D. Back to University again.



# Monitoring under water







“Oceans” underwater dolly shot in New Caledonia. Operating remote control “Game Boy” and Transvideo monitor is U/W focus puller Georges Evatt. René Heuzey was the cinematographer responsible for the big spider, the cuttlefish, and sardine run sequences. He also worked on many of the technical issues with Philippe Ros. Photos: Pascal Kobeh.



# With Luc Drion and Philippe Ros



I met with Luc Drion and Philippe Ros at the Micro Salon to learn about their experiences on “Oceans.”

Luc started on the production in 2005, and spent over 400 shooting days on location over the next four years.

**Luc:** “For the helicopter shots, we used a Stab-C gyro head, Arri 435, Angénieux Optimo 24-290 mm Zoom lens, Kodak Vision2 50D 5201 and 250D 5205 film. We shot in 4 perf. Most of my sequences were done in 4 perf. This allowed for repositioning in post. The film was finished in 2.35:1 widescreen.

“The storm sequence was shot near Brest, in Brittany. I was filming landscapes in the Aran Islands, off the West coast of Ireland. Our meteorologist called, and told us to get to Brittany as soon as possible. We arrived on Sunday. The water was nice and flat, dead calm. We wondered whether the meteorologist had made a big mistake. No. Monday came, along with a huge storm.”

The actual storm sequence was shot over a number of years. It began with the helicopter shots. But, in the comfort of an editing room in December 2008, it was decided to go back and shoot some more handheld on-board scenes of fishermen in the storm to add a bit more action and drama.

“For the fishermen scene, I shot with Kodak Vision3 500T 5219 film; I was in a storm and couldn’t use grads, but I knew Philippe could handle the contrast in post.”

**Philippe:** “we knew that wouldn’t be a problem—even when exposing for the shadows, we knew we could get the details in the highlights because of the wide range provided by Digimage Cinema, our post production facility. We had previously shot many tests and provided detailed checklists for all our camera crews. One of the interesting stories is how Luc cleaned his lens on the storm sequence. We were very impressed how clean the lens was—no raindrops.”





# Choppers and Zodiacs



**Luc:** "...cleaning the lens on the chopper...very interesting! - A rain deflector doesn't exist for the Stab-C gyro mount. So, for some shots we put the camera on the side, with short bracket, and the focus puller cleaned the lens from the chopper, leaning out with a safety harness. A little scary in the storm sequence. Two really important jobs on aerials: the focus puller and the pilot. The pilot gives us the camera position, the feeling, the move.

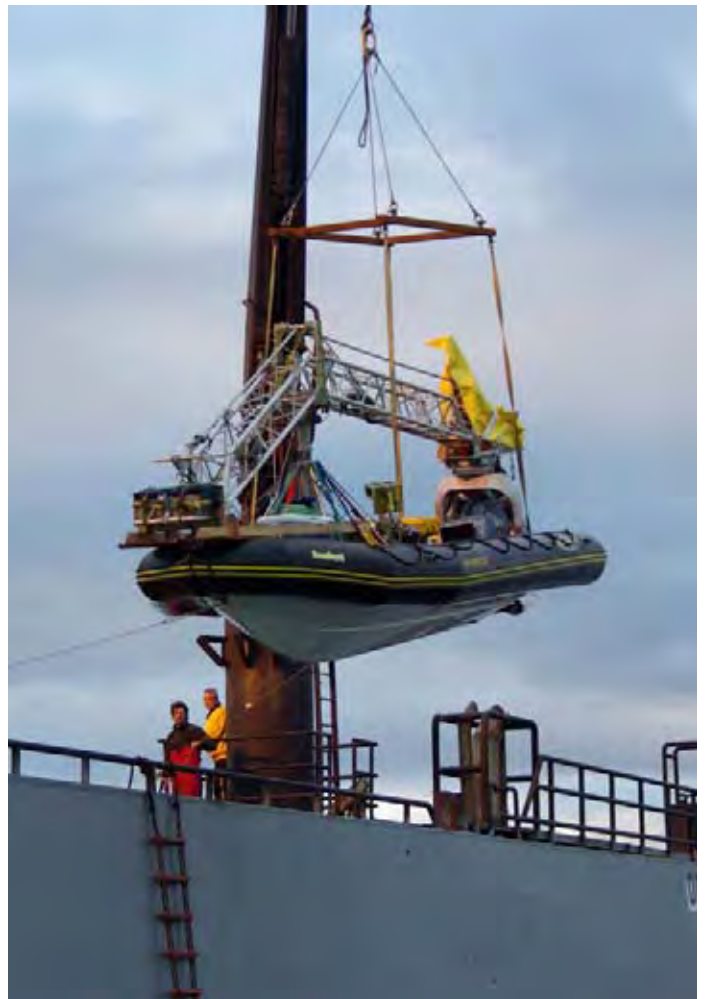
"I see the picture in my video monitor. I'm not looking outside the chopper at the real sea. Me, I keep saying to the pilot, 'go lower, lower!' With the the long lens, I see the waves crashing over the boat...and the pilot says, 'the wave is coming at us...now it's above us!' And I say, 'OK, better pull up then.'

"In the chopper, I was carefully framing the ship, and of course the pilot was already doing just that. It's instinctive with the two of us."

**Philippe:** "the pilot-camera operator is a similar relationship between a dolly grip and a camera operator. When I saw your dailies, I felt that."

**Luc:** "Yes, and also on the Zodiac, it's the skipper who's like the grip, maneuvering the boat into position. Working with the Canadian skipper from Quebec, he was great. It was like working with actors instead of animals. On the aerials and the Zodiac, we used a Transvideo Monitor. Standard definition, because the Arri video assist was SD. Maybe when we do "Oceans II," hopefully we'll have an HD-IVS so we can see focus, no flicker, no groundglass texture.

"The Rain deflector on the Thetys remote head in the Zodiac was the Achilles heel—it had to work 10 hours a day, but eventually it broke down. You know, the 435 is never a problem, never a



mechanical problem—it's usually something like a BNC cable or an accessory. It's difficult to do remote follow focus at sea on moving creatures from a moving boat. Our focus pullers used Remote follow focus devices—Preston, Arri, cmotion...

“For the crane in the Zodiac, we could move the camera from water level, change camera position, go above the whale, all over.

“The rig used an Arriflex 435 camera, 1000' magazine, with Angenieux Optimo 17-80 mm, 24-290 mm, or Arri-Zeiss Master 16.5-110 mm zooms.”

**Philippe:** “One of the challenges of intercutting digital acquisition was its much greater depth of focus—2.5 times greater than Super 35. So, in order to keep the audience's attention on certain action, we decided to defocus various areas of the image. We did that on 200 shots—and we also refocused some of the 35mm shots to keep the same rhythm as the animals. Luc and I worked with post for several days—it was a slight improvement, but I think the audience appreciates it —without realizing what it is. For example in the whale jump, we focus on the area where the whale is coming towards us.

“Making Oceans was a beautiful adventure, very emotional.

“We followed and tried to achieve the desires of the producer and co-directors. It is incredible how these two men were able to convince all of us to do such challenging research and shots. What Luc could do on the helicopter, what I did with the Microscopic F23 shots, and the underwater cameramen could do—it all came from one fact: the producers gave us the time to do things. And that was a great gift for a cinematographer, because it is so rare now. We were able to say ‘but we can do it better.’

“For example, the jump of the whale shot—we spent 3 weeks shooting. And they saw the dailies and said, ‘yes it was good, but could it be better?’ So we kept shooting a few more weeks until we got it.

“And that was the great thing. With Jacques Perrin and Jacques Cluzaud, they always ask you to do better. They are always pushing the limits.



Most of the equipment for Oceans was custom designed. The philosophy was ‘if we can imagine it, we'll build the gear to do the shot.’ To chase whales and dolphins, a remote gyro-stabilized camera head on a crane was installed in a Zodiac RIB (Rigid Inflatable Boat). The head, named Thetys, not only had to maintain a level horizon, stabilize bumps, wobble, pitch and roll, but it also had to withstand the rigors of weeks at sea, with salt water, wind, high humidity and spray.

Credits for the Thetys unit go to: Jacques-Fernand Perrin, System design engineer; Alexandre Bügel, System fabricator and Key Grip; Luc Drion, Director of Photography; Stéphane Aupetit, 1st assistant; Olli Barbé, Line Producer.













# Birdy Fly



As we were saying, “if they could imagine it, they probably shot it.” Meet Frédéric Jacquemin, Manager of Birdy Fly, (at left) showing us the guts of Birdy Fly at the Micro Salon.

Birdy Fly on “Oceans” was an electric radio-controlled helicopter with a Super 35mm carbon-fiber modified lightweight Arri 2C.

Birdy Fly is helpful for close-range aerial filming. The miniature helicopter can fly up to a speed around 50 mph. Exciting shots can be made using wide lenses flying at low altitudes (from almost ground-level to 300 feet).

The radio-controlled helicopter is flown visually by the pilot, up to a distance of about 600 feet. Longer distances are possible if the pilot follows in a chase boat. The helicopter is equipped with a remote head, which a camera operator controls for pan, tilt, and roll.

The helicopter has an electric engine, which has proven to be more reliable than previously used methanol fuel. Electric helicopters have a better reliability, start up immediately, and are not affected by atmospheric conditions like altitude, temperature, and humidity. The absence or lack of engine vibrations brings a steady work with a great picture smoothness. Absence of exhaust smoke and a low noise level also help. The batteries allow more than 10 minutes of flight time with the 35mm camera with 200 foot magazine ( 2 minutes, 13 seconds at 24 fps).

The clever use of carbon fiber to replace the original aluminum castings lightens the load to a mere 7.09 pounds with film, lithium battery, camera, receiver, iris motor, color video assist, wireless transmitter, and 20mm lens with filter.

The total weight of the mini chopper with 35mm camera package is 23 pounds. The rotor diameter is 5.9’.

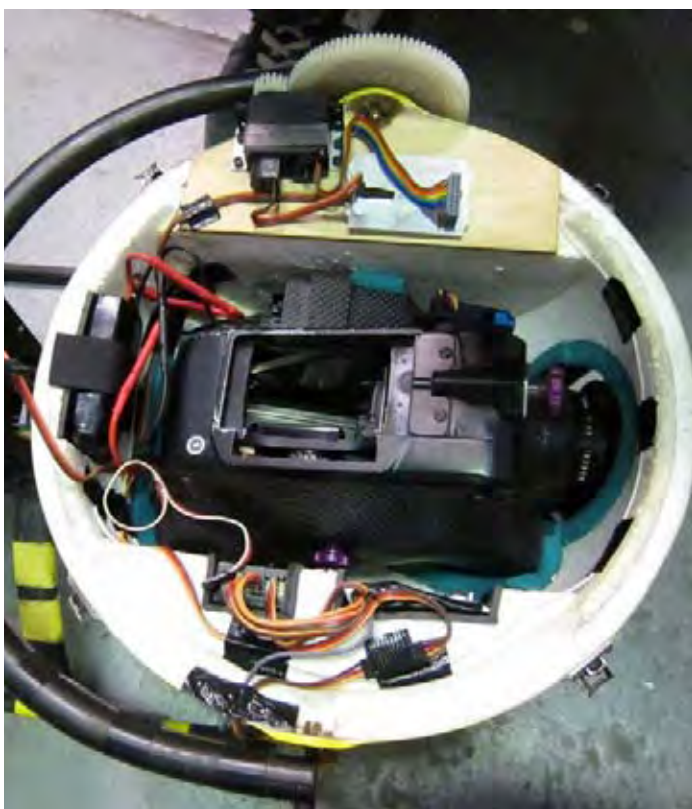
Credits for the Birdy Fly unit on “Oceans:”

Jacques Cluzaud : Director

Frédéric Jacquemin: Birdy Fly Manager

Christophe Pottier: Director of Photography

Melinda Lignot: Camera Assistant

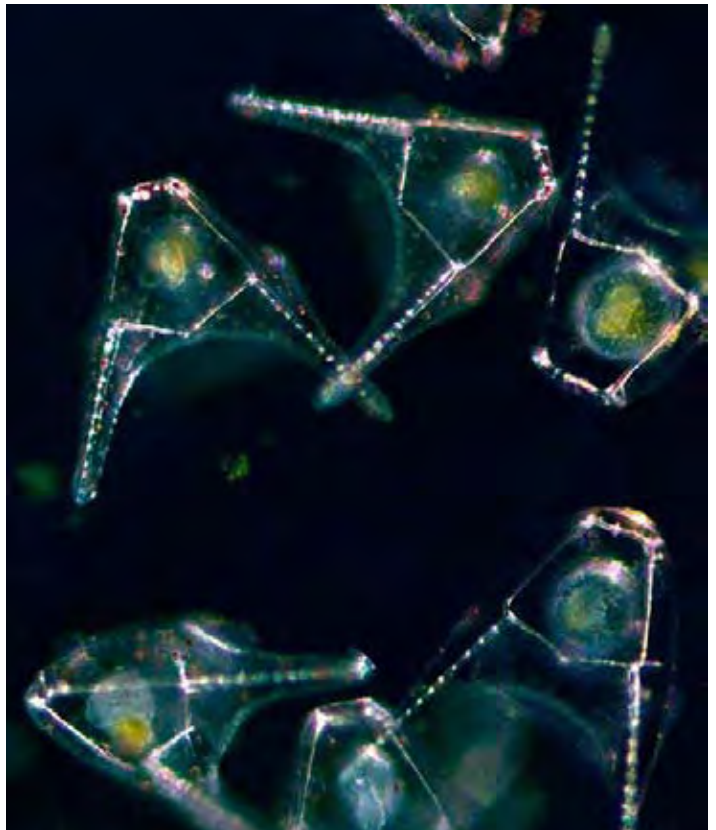
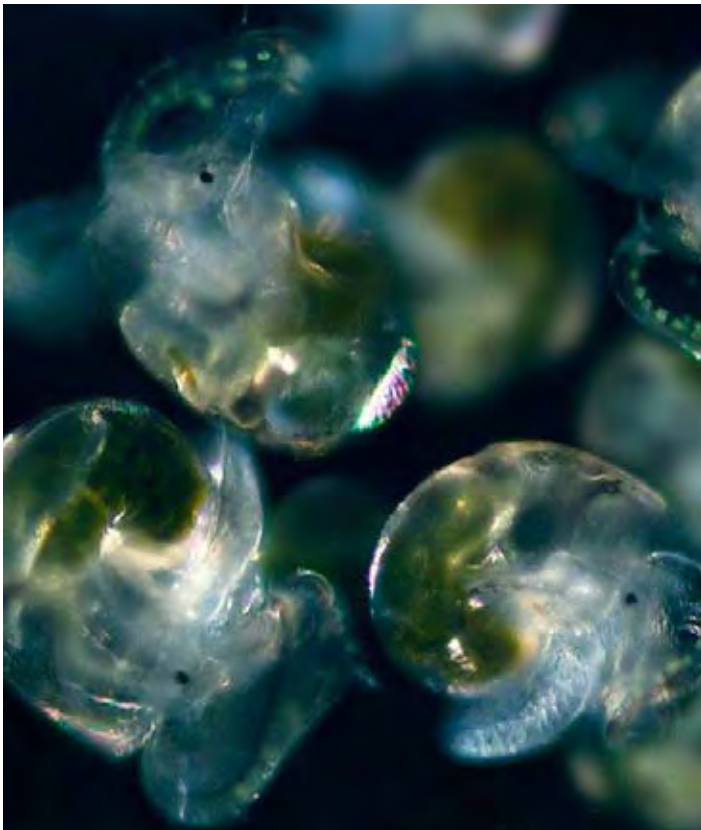
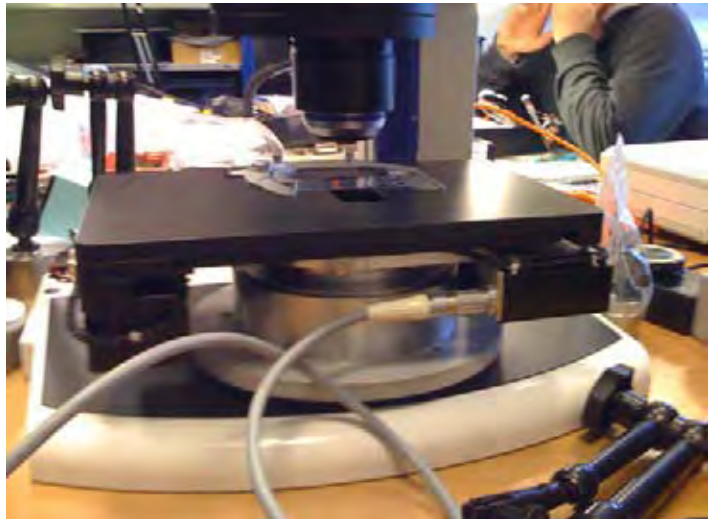
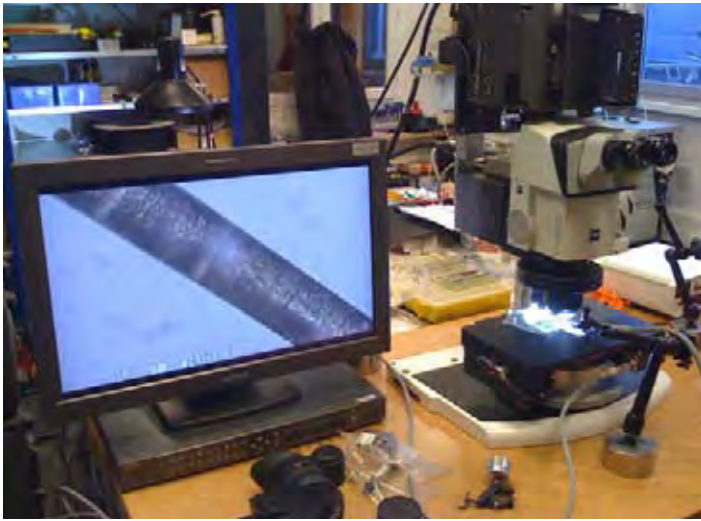


Birdy Fly Amphibious Mini Heli Pad





# Microscopic Louma on "Oceans"





# Underwater Cinematography on “Oceans”

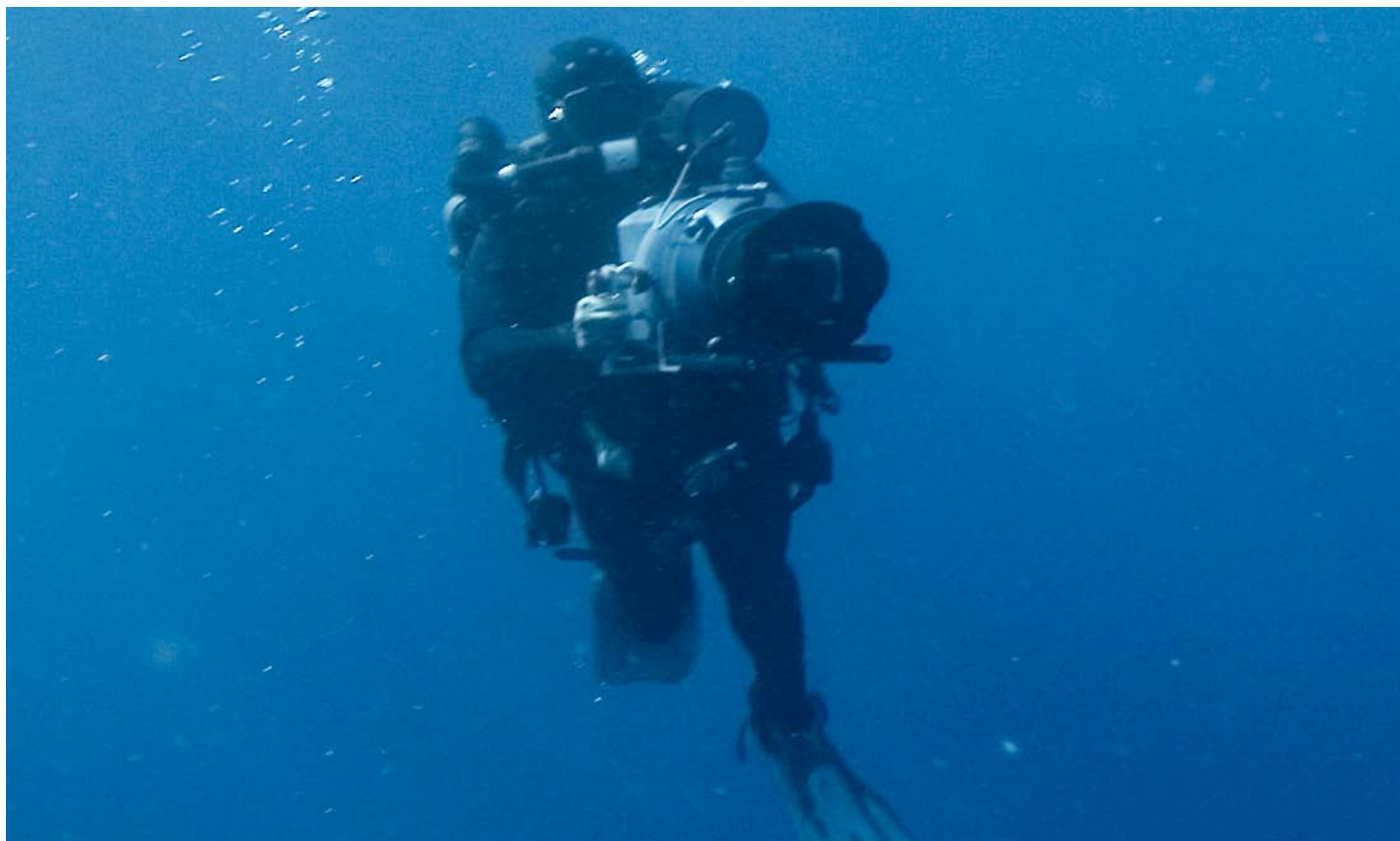




Didier Noirot and Great White. Photo: Pascal Kobeh



# Underwater Cinematographers



Didier Noirot worked on “Oceans” as the Underwater Director of Photography. He also supervised grading of the underwater sequences. That’s Didier, *above*, with a great white shark about the size of a school bus, off Guadalupe Island, Mexico. “There was nothing to fear,” he told me. “The shark is probably more afraid of us.” Once again we refrain, “Do not attempt...”

There is an amazing sequence in “Oceans” where scientist François Sarrano is calmly swimming next to a great white shark. It is lyrical, zen-like. He seems transformed, a baby shark swimming with its parent. I had to wonder—how did they shoot this?

Didier Noirot lives in the hills above Grenoble. He was born in Saint-Gilles, in the Vendée region above Bordeaux. He started as a still photographer, and joined Jacques-Yves Cousteau’s team as a photographer and diver. One day, Cousteau said, “Why are you always shooting stills? Why don’t you shoot motion pictures?” That was, as they say, the beginning of a long, 15 year relationship.

Didier spent 10 years working as underwater cinematographer on BBC Blue Planet and many other prominent productions.

On “Oceans,” the first year was spent testing, planning and prepping equipment. The real start was 2005—12 weeks of testing. From 2006 to 2008, over 15 months were spent on location.

Lots of time and planning was put into developing the underwater housings for four Sony F900/3 cameras, built by Swiss engineer Jean-Claude Protta of Subspace Pictures ([www.subspace.ch](http://www.subspace.ch)). Subspace is in Geneva, and Didier is a little over an hour away in Grenoble, so the two were in constant contact throughout development.

The housing began with a 220 pound solid block of aluminum,

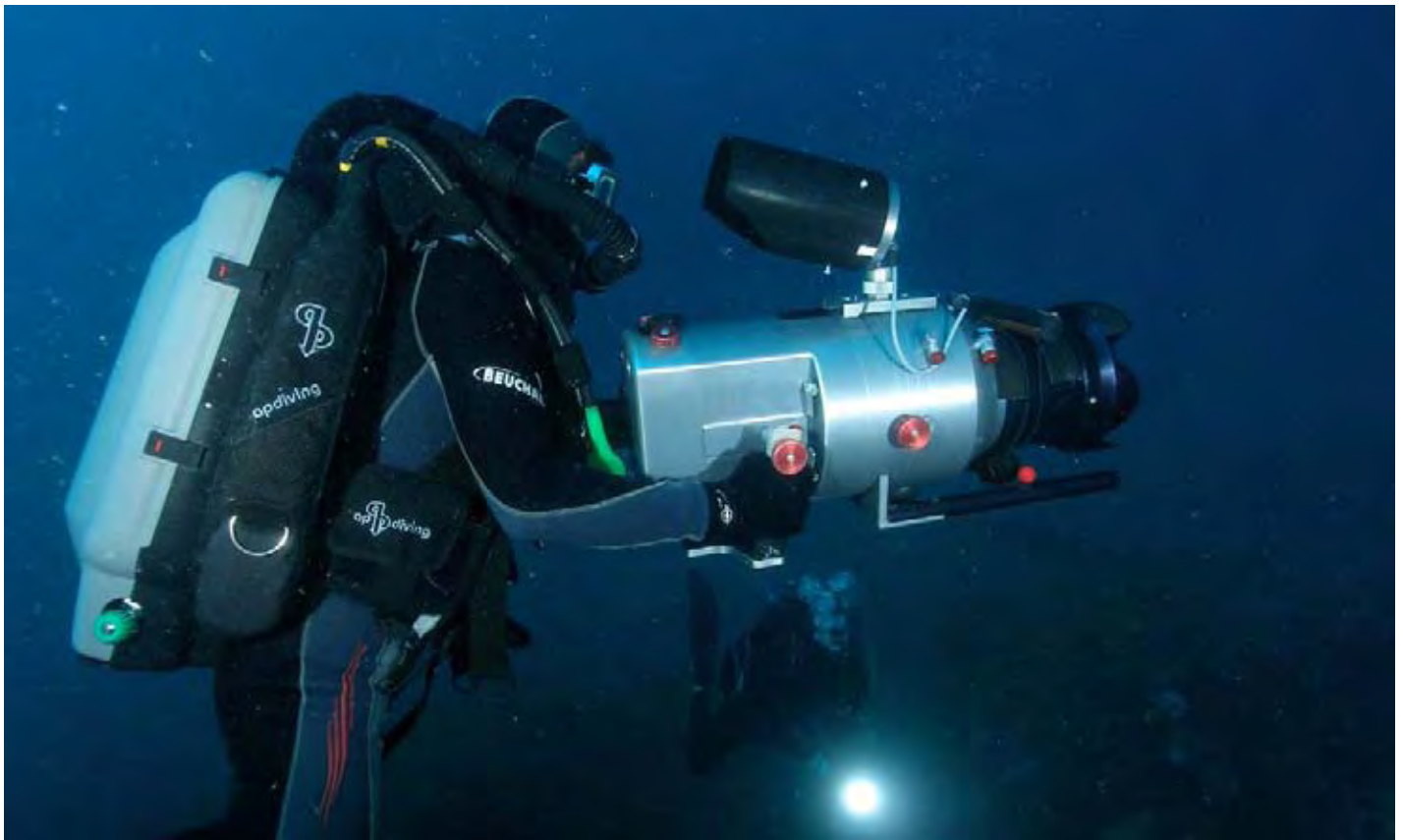
2.5 feet long. After milling, it weighed only 38 pounds. There were no seams nor was any welding done.

Following Philippe Ros’ tests to ensure the best possible look under any condition, Christian Mourier from Sony France and Olivier Garcia from HD-Systems created custom Gamma curves and Scene Files for the camera that could be controlled directly with two buttons on the outside of the housing. This avoided having to drill down through menus, which would be too time-consuming and arduous. As Didier pointed out, “the animals would be gone by the time we could have made our settings using a menu. The switch controls were fast and easy.”

Scene files were set mainly according to the color and clarity of the water. The goal was a seamless marriage of digital and film scenes, so their color, contrast, saturation and sharpness would match during grading. Philippe instructed all the camera crews to think ahead to the final digital intermediate, what he called a “scan way of thinking.” See the charts on the next page. They were attached to the back of each underwater housing.

A few underwater scenes were shot on film, using an Aaton 35 in a housing that Galatee Films owned. Didier explained, “In the very humid conditions of Costa Rica, it was too humid for the tape and mechanisms of digital/video. We didn’t want to risk condensation. The Aaton camera ran at 25 fps. We also used an Arri 35-3 for slow motion at 75 fps. But, your time is limited with a 400 foot magazine.”

Not everyone is prepared to shoot short bursts underwater on film. That was the importance of all the years of training with Cousteau and the BBC—knowing when to roll, to conserve film and not miss a shot. They used Kodak 50D and 250D on the



underwater shots. Didier said, “One of the advantages of film is how it manages the highlights. That was the great achievement of Philippe Ros and the custom gamma team—matching film and digital, paying special attention to the highlights. On film we have a big exposure latitude. On video, we have less. The custom gamma curves gave us a lot of latitude. We could not be underexposed—because we need to reduce noise in low light. It was crucial to keep the highlights. So we practiced and trained to handle this. We were careful not to overexposure.

Why do underwater cinematographers live in the mountains? Didier lives in Grenoble. David Reichert is an American who lives in Jackson Hole, Wyoming, and was underwater camera operator on “Oceans,” for about 600 shoot days on location over 4 years.

David discussed the swimming with sharks sequence in Guadalupe. He said, “This had never done before. It’s definitely a ‘do not attempt this at home thing.’ The team was able to work with sharks because their behavior changed – we worked well together. It was as if the sharks were treating the humans like sharks. I kind of think that maybe we’re the ones who are primitive.

“We used Sony F900 cameras developed by Galatée Films. We were constantly switching gammas according to the shot. In underwater work you get weird problems with the light because of the sun shining through the water and getting diffused through the layers. Often there’s a big bright region on top, which drops off to dark, with a shiny fish and a diver in the shot.

“They maximized the F900 for the big screen. The push buttons connected to a box in the housing to control gamma, which is contrast. We were filming anywhere from 0 to 100 foot depths, changing gamma constantly.

“They made a housing that was tough, ergonomic to film with, and let us swim fast after things like blue whales. The housing was like a torpedo. Our lens was a ZEISS DigiZoom 6-24 mm.

“We used rebreathers and other ways to stay underwater. Master the technology for the situation. Like a little cobra oxygen rebreather to 20 ft. Or a little chest-mounted sardine can size tank to chase whales. Sometimes we used snorkels or small scuba bottles.

“The blue whale shot took lots of patience. Working with scientists, we learned that the whales feed on plankton and krill, which make the water look cloudy. Using satellite imagery, the scientists could look at the chlorophyll levels in the water. Finally, we had water clear enough for good images. We returned the following year, having learned from the first. On this production, anything someone could dream up was considered. If possible, we tried it.”



“Tinkerbell” diver with test targets.  
photo: René Heuzey



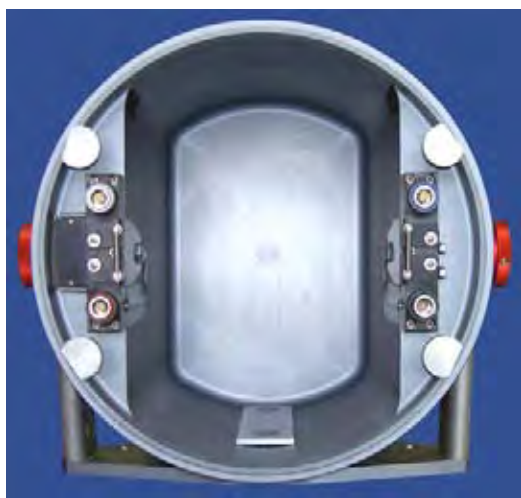
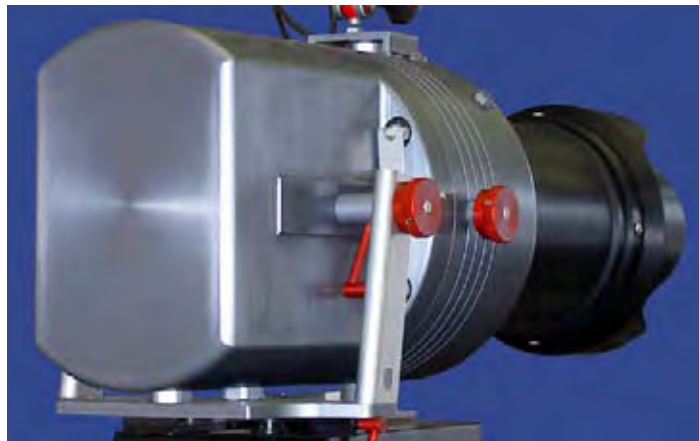
# Underwater Housing for Sony F900



René Heuzey, cinematographer,  
with rebreather and housing



# Subspace Housings



*Above, left:* Subspace Housings for Sony F900 used on "Oceans".

*Above right:* similar housing for Sony HDW-750.

Subspace's underwater housings look like Swiss watches and Swiss Army knives. Like a Rolex Oyster, the housing is milled from a solid block of metal. The controls are Swiss Army knife read—just like our Film and Digital Times logo.

Jean-Claude Protta is the head of Subspace. He's a Swiss engineer, born in Geneva, diving since 1958. He was a Swiss National Diving Instructor (FFESSM) and holds the title of CMAS National Instructor from the Swiss Diving Federation. In 1958, he con-

structed his first waterproof housing for an old Kodak 620 still camera. Since then, he never stopped designing, building or modifying underwater housings, strobes and lights for photography, cinema and more recently for video.

In 1990, back from a ten-year journey around the world, he decided to start his own company to share his experience and passion for everything involved with underwater images. The goal of Subspace is to create and manufacture high-quality underwater camera equipment and to bring new ideas coming from experience.

[www.subspace.com](http://www.subspace.com)

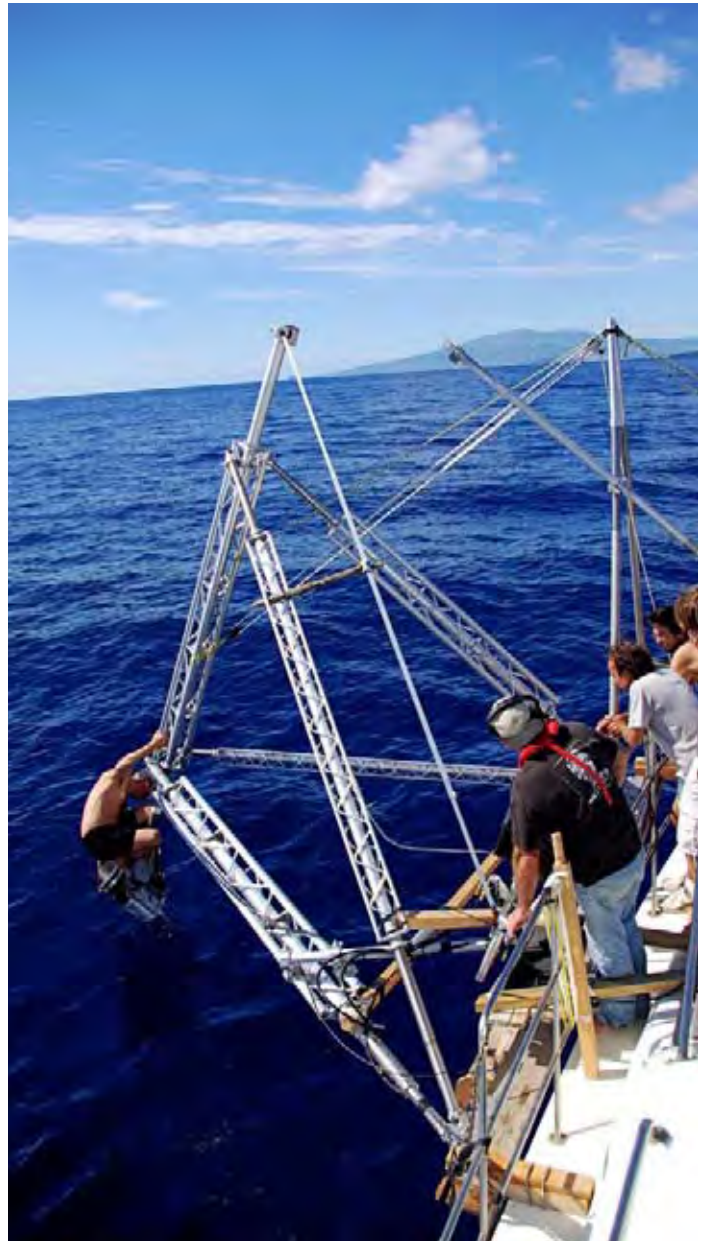
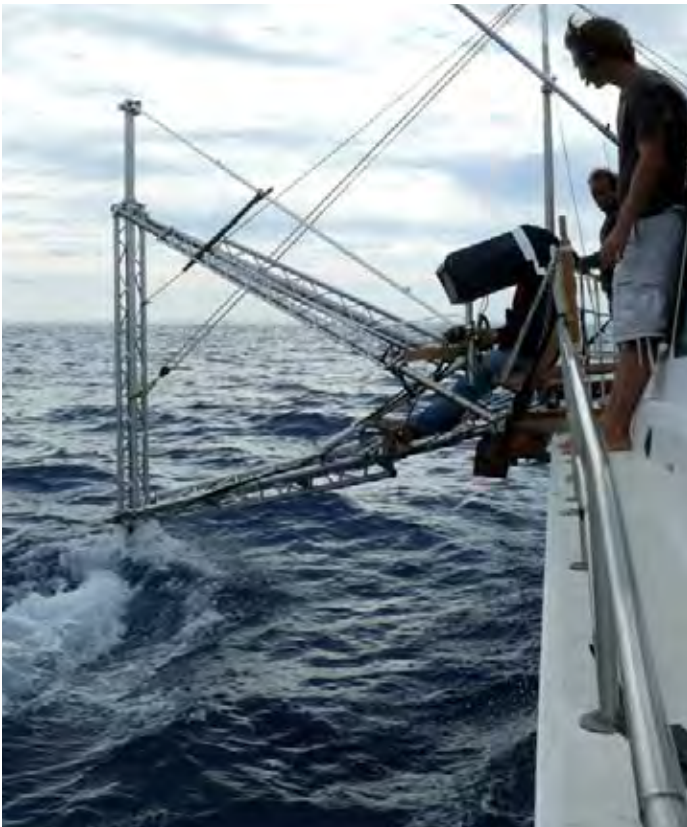


# Moving Pictures



Capsule Housing. Photos *left and right*: Mathieu Lamand.  
Capsule in Polecam rig. Photo: Alexandre Bügel.

I often endured the frequent exhortations of a particularly hardened Hollywood producer whose favorite question was “what’s the difference between a movie and a radio show?” The answer he wanted to hear was “moving camera.” What ultralights did for “Winged Migration,” custom camera capsules, Polecam, Jonas, Simeon and Innovision did for “Oceans,” enabling the cameras to glide through the water chasing dolphins and many other creatures gliding near the surface. Each capsule contained a Sony T-Block HKC-T950 camera head tethered to the chase boat with fiber optic cable, and a ZEISS Digizoom 6-24 mm B4 mount lens.





# Jonas, Simeon



Jonas is the red one, Simeon is yellow. Developed with the French Navy, these underwater camera drones are tethered to the mother ship with a fiber optic cable. Photos: Alexandre Bügel.





# Flat or Domed Port

Underwater housings regularly have a choice of two lens ports: flat or domed. The flat port is used for shooting topside (in heavy spray), for underwater extreme close-ups, and for underwater shots that break the surface.

Because of the magnifying properties of water, shooting with the flat port underwater will result in a lens angle that is decreased 33%. So a 35mm lens on the camera underwater will effectively be the same as a 50mm lens topside, and focus witness marks will not be accurate.

A corrective domed port reduces chromatic aberrations underwater and neutralizes the magnification factor, so the angle of view is the same. Since the domed port effectively becomes the front lens element, focus is shifted to a point roughly 14 to 18 inches in front of the image plane. Therefore, close-focusing lenses are recommended. The ZEISS DigiZoom 6-24mm focuses to 22". This is a situation where the extra depth of field of the 2/3" imager is a good thing; it certainly helps for close-focus domed port underwater housings and for periscope moving macro shots, as we shall see on the next page.



Left: Alexandre Bügel operating the custom winch for Jonas and Simeon



Camera Capsule in Jonas, towed by boat





# Innovision



Focus Puller Cyrille Liberman (left). Foam indicates high water mark.

The “Oceans” crew spent over a month in Townsville, Australia (near Queensland), shooting macro sequences.

Richard Fitzpatrick, an Australian marine biologist and no slouch when it comes to underwater cinematography, with major credits on more than 30 films, said, “the stuff we’ve seen so far makes “Planet Earth” and “Blue Planet” look like kiddies’ training films...they’ve got crews who did “Superman,” “The Matrix,” and the “Star Wars” movies.

To get the macro shots, Mark Centkowski’s Innovision waterproof HD Probe was used on a Sony F23 with a Technocrane 15’.

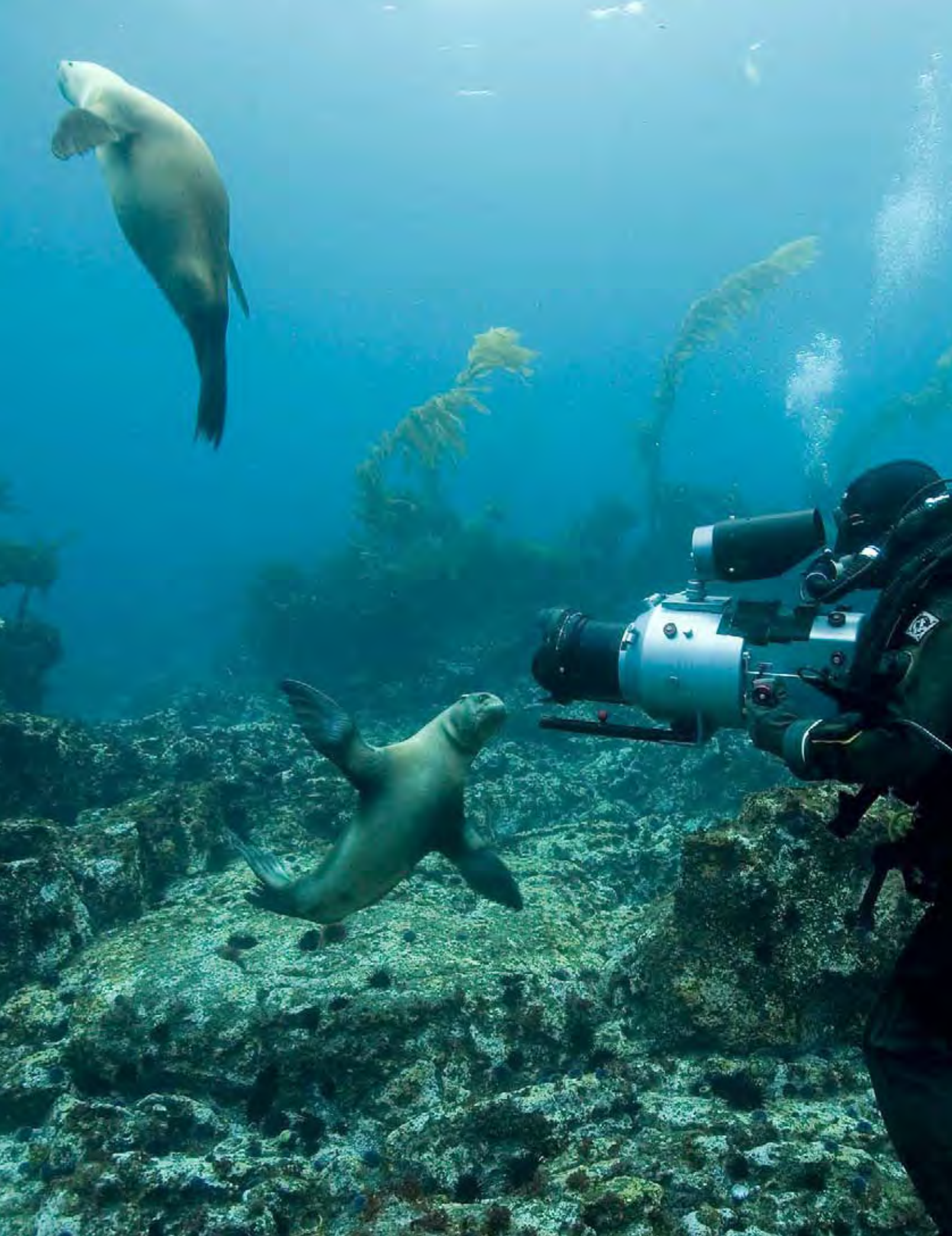
The HD Probe’s 90° Periscope attachment is waterproof to 9". The high resolution elements and relay optics have a fast aperture of T3.3, and come with 5, 8, 12, 17 and 23 mm objective lenses. Multiple lens element coatings provide sharp, low dispersion images that matched with the rest of the production.

[www.innovision-optics.com](http://www.innovision-optics.com)



Photos: Philippe Ros





# Oceans Team

## Principals

Producer - Director: Jacques Perrin  
Co-Director: Jacques Cluzaud  
Production Manager: Olli Barbé  
Production Company: Galatée films

## Underwater Cinematographers

Didier Noirot  
René Heuzey  
David Reichert  
Okumura Yasushi  
Simon Christidis  
Eric Börjeson  
Jean-François Barthod  
Thomas Behrend  
Mario Cyr  
Denis Lagrange

## Directors of Photography

Luc Drion  
Luciano Tovoli, AIC, ASC  
Philippe Ros  
Christophe Pottier (Mini-Hélico)  
Laurent Fleutot  
Laurent Charbonnier (Turtles, Iguanas)  
Eric Börjeson  
Philippe Garguil  
Thierry Thomas  
Michel Benjamin  
Jean-François Barthod  
Olivier Gueneau (Jonas, Siméon)  
Valérie Le Gurun

## Still Photographers

Pascal Kobeh  
Richard Herrmann  
Roberto Rinaldi  
Yves Gladu  
Mathieu Simonet  
Julien Samson  
Hideki Abe  
Mathieu Foulquier

## DITs

Francois Paturel (Chief DIT)  
Cyrille Liberman  
Leonard Rollin  
Salomé Gadafi  
Euriel Etevenon  
Mathieu Lamand  
Benoit Torti  
Melanie Desautels-Guegan  
Manuel Henry

## First Camera Assistants

Stephane Aupetit (Chief 1st Asstistant)  
Melinda Lignot  
Eric Bornes  
Maryse Charbonnier  
Rodolphe Soucaret  
Thierry Tronchet  
Tony Chapuis  
Marine Delcourt  
Steve Moreau  
Nicolas Desaintquentin  
Francois Quillard  
David Reinhard  
Edna Roelofse  
Antoine Struyf

## Panavision Alga Techno

Philippe Valognes: Digital Imaging Technical Manager  
Natacha Vlatkovic: Rentals Manager

## HD-Systems

Nicolas Polacchi  
Olivier Garcia  
Hervé Theys

## Sony France

Christian Mourier: Engineer from Sony  
France Hypergamma Designer, SF25 & Metadata designer  
Fabien Pisano : Engineer, HD trainer

## EMIT

Trevor Steele : U/W traveling, ZEISS dealer, Help on Technical Issues and Tests

## BAND PRO

Gerhard Baier : Managing Director Band Pro Munich, ZEISS DigiZoom provider, Help on Technical Issues

## Partners and Providers

Alain Gauthier: Technical Manager, ARRI Specialist  
Panavision Alga Techno  
Band Pro Munich: Gerhard Baier  
ARRI München: Thomas Popp, Marc Shipman-Mueller  
Subspace  
Bogard S. A., Emit S.A.

## Birdy Fly

Aaton  
HD-Systems, Loumasystems  
Transvideo  
Transpalux  
TSF  
Consultimage  
Deveoptim  
Magic Hour  
Le Team

Carl Zeiss Digital Cinema Lenses  
Dr. Winfried Scherle, Helmut Lenhof  
Carl Zeiss MicroImaging  
Ulrich Kohlhass, Engineer

Kodak  
Fujifilm  
Sony  
Canon

## Post Production

Digimage Cinéma  
Denis Auboyer: CEO  
Olivier Duval: Deputy Managing Director  
Laurent Desbruères: Senior Colorist  
Tommaso Vergallo: Digital Cinema Mngr.  
Juan Eveno: Chief Operating Officer

Arane / Gulliver  
L'Est  
Mikros Image  
Buf Compagnie  
Def2Shoot  
CTM Solutions  
Eclair Laboratoires

(editor's note: there are many more people who worked on this film—450 in fact—and we apologize for missing so many contributors.)